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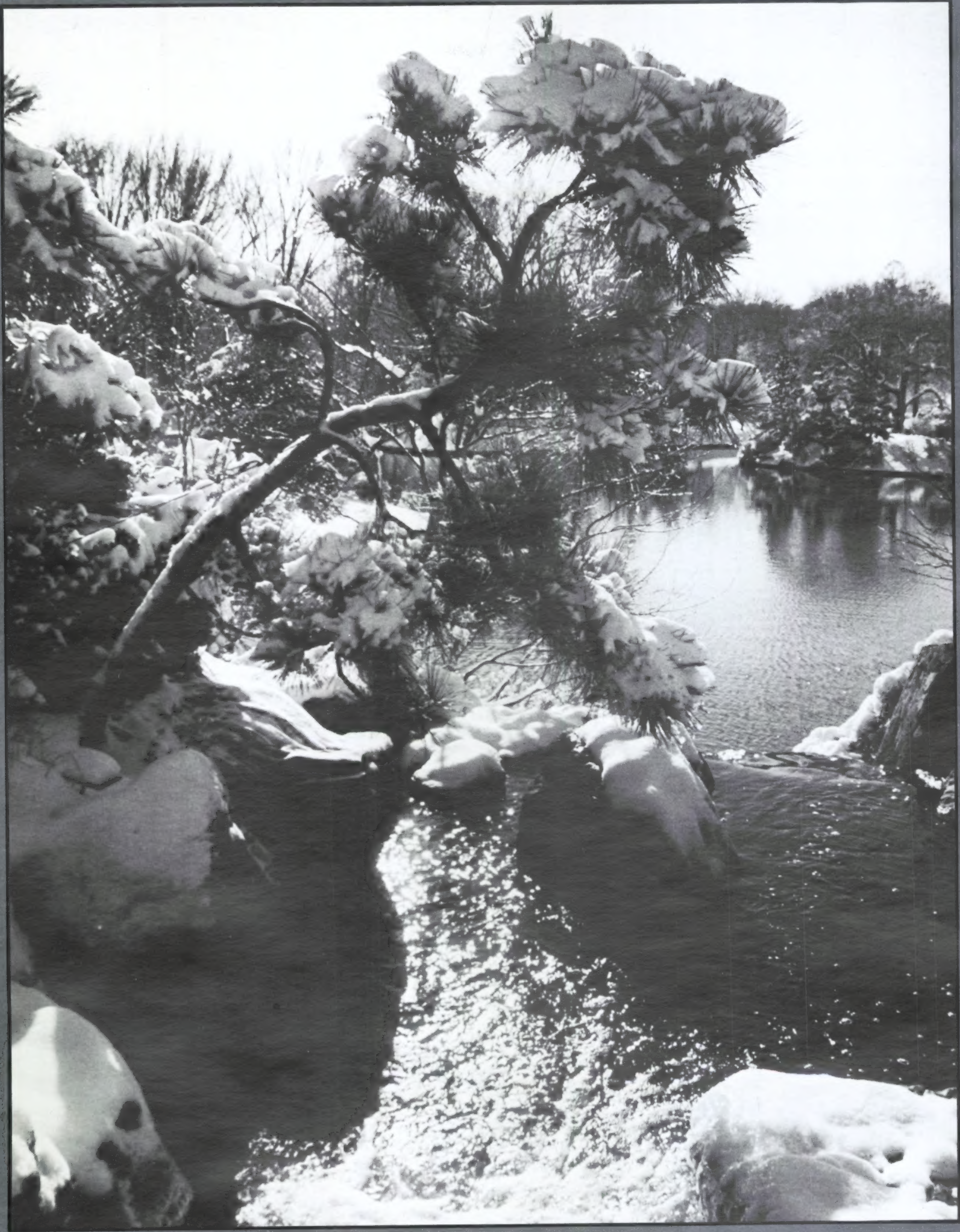
Missouri Botanical Garden Bulletin

JANUARY / FEBRUARY 1990



VOLUME LXXVIII
NUMBER ONE

SHOUT
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— Photo by King Schoenfeld

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The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $40 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

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Comment

A New Decade

The beginning of a new decade brings with it significant challenges for the Garden. We face 1990 knowing the Garden must continue its environmental, horticultural and educational programs without the financial resources it needs. Public support for Garden programs, services, and continued maintenance of the 79 acres and historic buildings amounts to 32% of the Garden's total operating budget. This requires that we raise the remaining 68% from our membership program, annual giving campaign, special fund raising projects, grants and other similar efforts. The Garden has always remained committed to quality programs and services. As the demand increases, and our renovated and new facilities such as the Climatron open to the public, a greater number of St. Louisans will visit and participate in our programs. The challenge is clear.

As we plan for this decade we know we are facing a world environment that is exceedingly fragile, presenting us with an imperative to help educate everyone about the delicate balance within our ecosystem.

Through the cooperation and dedicated support of our members and volunteers, every effort will be made to respond to the needs and demands of our visitors and the community.

The capital campaign that began in 1987 is generating good results and we are especially appreciative of Trustees, Members, corporations and foundations who have funded this important project. A major gift recently received from the William T. Kemper Foundation will allow us to continue with our capital drive on schedule (see next page). This magnificent contribution will provide substantial support towards the final phase of the campaign, The Center for Home Gardening.

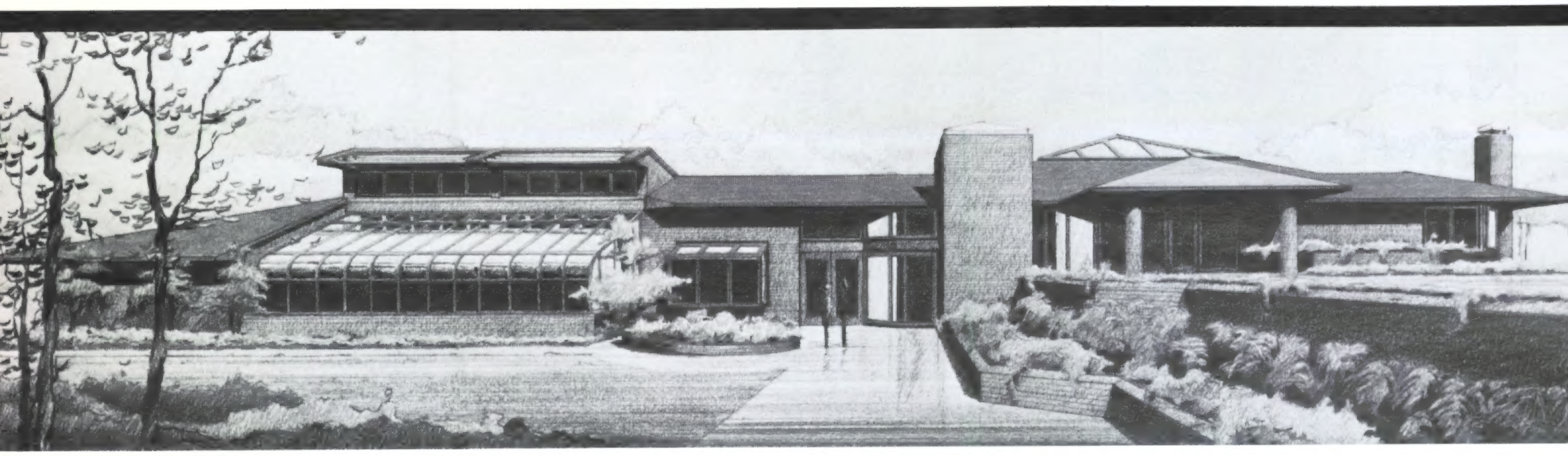
But the Garden has other needs. Our hope and challenge is that we will be able to respond to our mission to inform visitors, members and the community about the importance of plants in our daily lives in a time of tight financial resources.

We are committed to our partnership with the St. Louis community and ask for your assistance to achieve our goals in the beginning of this new decade.

Peter H. Raven

L.A. KELLY

(Left to right): Peter H. Raven, Marshall R. Crosby, Charlene Bry and Peter Loewer, authors of *A World of Plants: The Missouri Botanical Garden* (Abrams, 1989) at an autograph party at the Ridgway Center, Sunday, December 3, 1989.

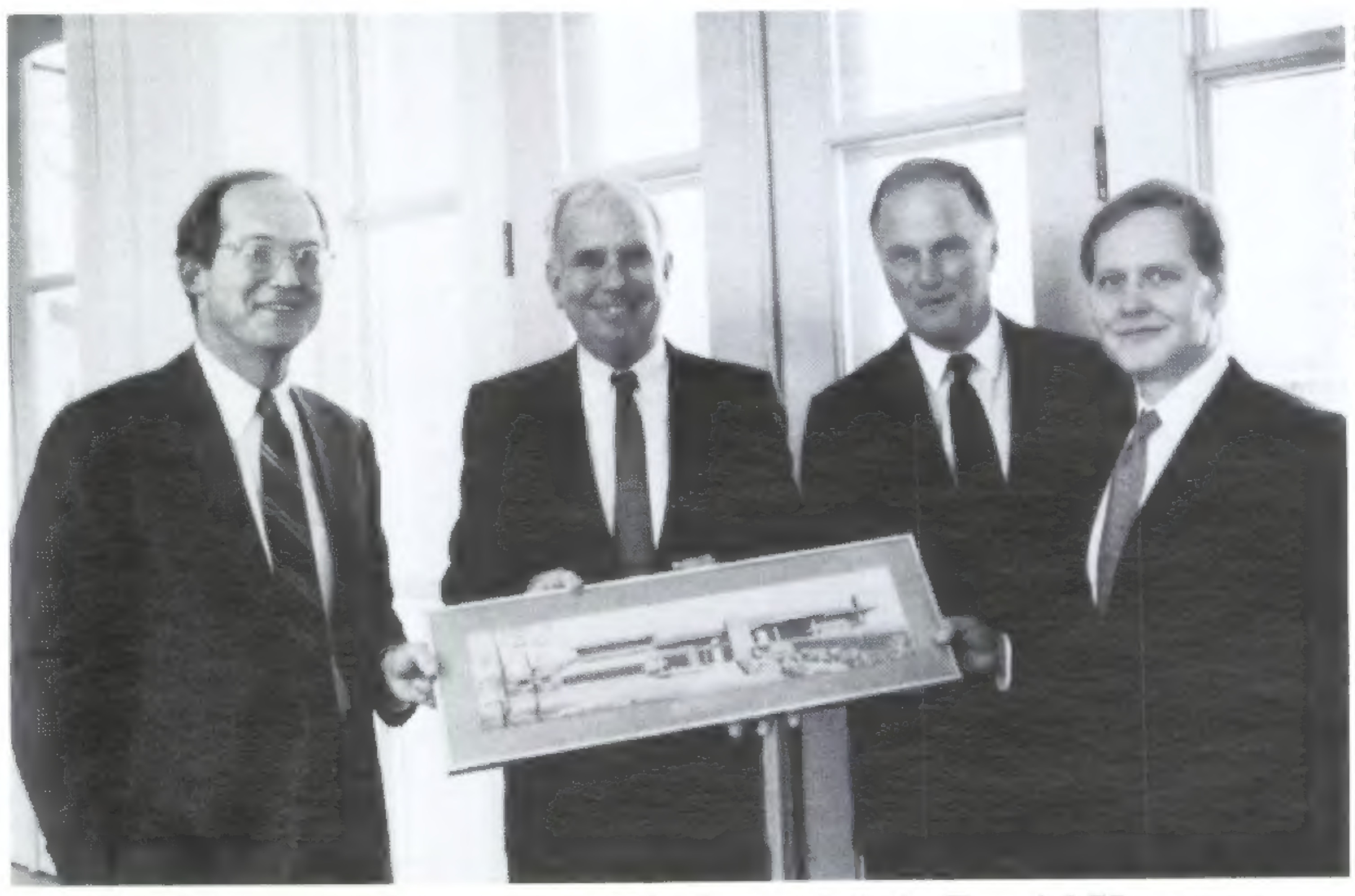


KEMPER FOUNDATION NAMES CENTER FOR HOME GARDENING

At a press conference held at the Garden on November 20, David W. Kemper, Chairman and CEO of Commerce Bank of St. Louis, announced a gift of $1.25 million from the William T. Kemper Foundation to name the visitor education building of the Center for Home Gardening, the last phase of the present capital campaign that began in 1987.

The William T. Kemper Center for Home Gardening is the first major gift in St. Louis from this foundation, which was established last June upon Mr. Kemper's death. Commerce Bank serves as the Foundation's Trustee. In accepting the award, Dr. Raven noted the many opportunities opened by the Center to serve our members, visitors and the entire St. Louis community. He observed that, "The Kemper Center continues the Garden's historic commitment to educating our audience about the importance of plants in their daily lives. For many years our members and visitors have expressed a desire for this kind of facility, and we anticipate it will be used a great deal by the public. St. Louis is already a community very keen on gardening and we're delighted to expand this enthusiasm. On behalf of all who will share in this gift, we are deeply grateful."

The entire community will benefit from this facility, which will be used by both members and the public.



RICHARD BENKOF

Making the announcement (left to right): David Kemper, Garden Trustee; Peter H. Raven, director; Robert Kresko, president of the Board of Trustees; Michael Fields, excecutive director, William T. Kemper Foundation.

In presenting the award, David Kemper remarked that "The Missouri Botanical Garden is a great resource for both St. Louis and our country. We are delighted to be able to make a significant contribution to the Garden as an integral part of Commerce Bank's commitment to St. Louis, and we are particularly pleased to support a project that will be of special interest and useful value to all."

Construction of the William T. Kemper Center for Home Gardening will begin in Spring 1990. This structure, designed by the St. Louis firm of Louis Saur & Associates, is the first phase of an 8.5-acre development to contain more than 20 residentially scaled display gardens, essentially outdoor classrooms that demonstrate the library and exhibit resources available through the Kemper Center.

As of November 22, 1989, the capital campaign had raised $17,167,211 in gifts and pledges.

MISSOURI BOTANIC
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This page, above: "When a Tree Falls In the Forest" exhibit.

Right: Mixing the new soil.

Far right: The new entrance.

Opening March 1990

Climatron Nears Completion

The long wait is nearly over. Under the glittering arc of the Climatron's new glass dome, a rain forest is taking shape.

Over the past 22 months the interior of the Climatron has changed dramatically. Although many of the giant trees were left in place throughout the renovation, the earth around them was completely excavated as new heating, ventilating and air conditioning systems were installed. The main entrance and visitor pathways have been designed and rebuilt to be accessible to the disabled.

The new landscape of cliffs, valleys, waterfalls and winding streams is currently being replanted with an extraordinary variety of tropical vegetation including orchids, bromeliads, cycads, bamboos, palms, ficuses, begonias, climbing vines and various water plants. Replanting will be complete by the end of January.

Soil Replacement

The renovation has provided the opportunity to replace the Climatron's original clay-based soil with an improved mixture ideal for tropical horticulture. The new soil, nearly 900 cubic yards, consists of two parts topsoil, two parts turface (calcined clay), one part compost, and one part peat moss.

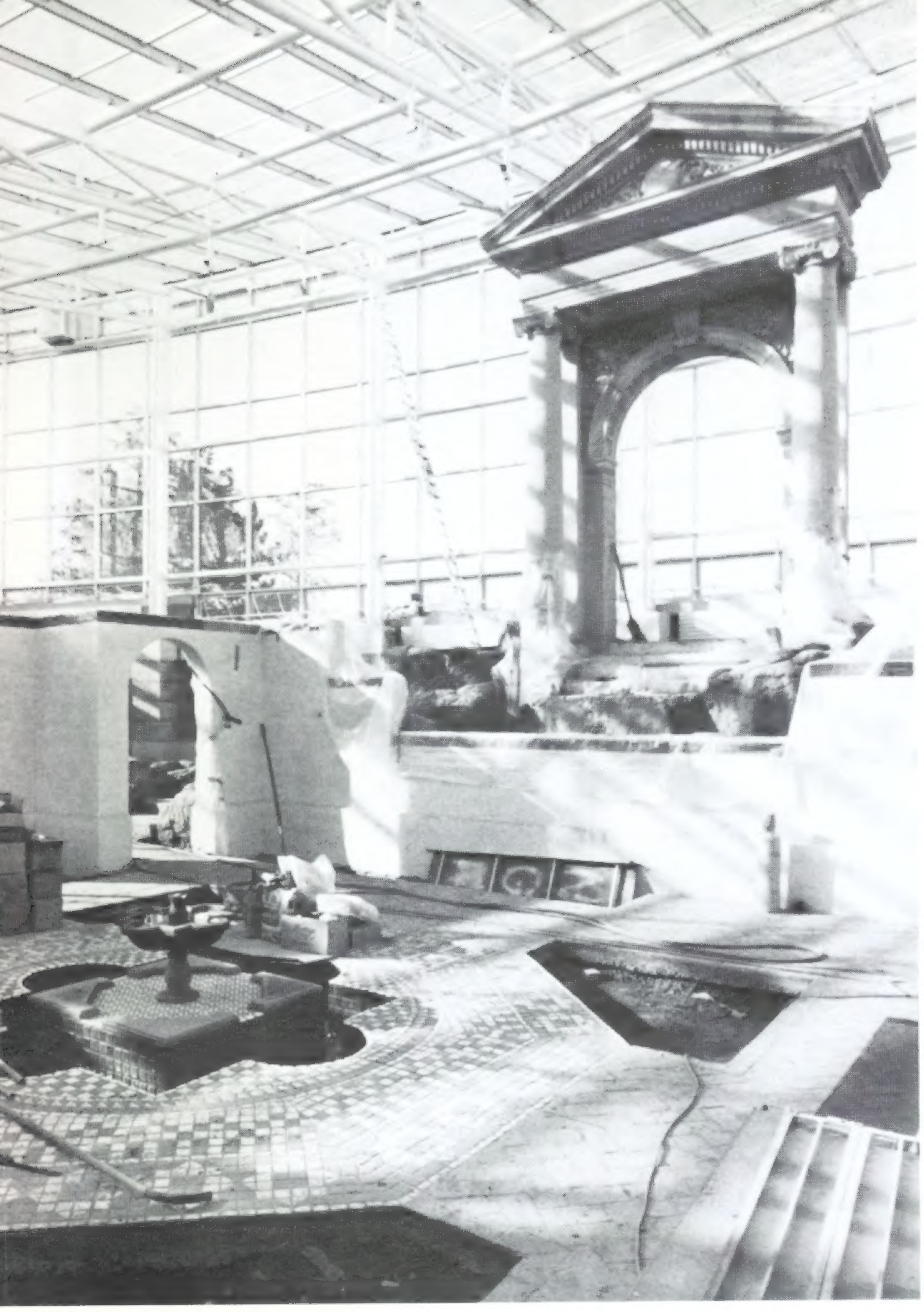
Preparing the new soil was an enormous undertaking. The soil was mixed during August, September and October in three batches of approximately 300 cubic yards each, using a KBL-600 front loading bulldozer. Each batch required three complete mixings for all the components and took six hours.

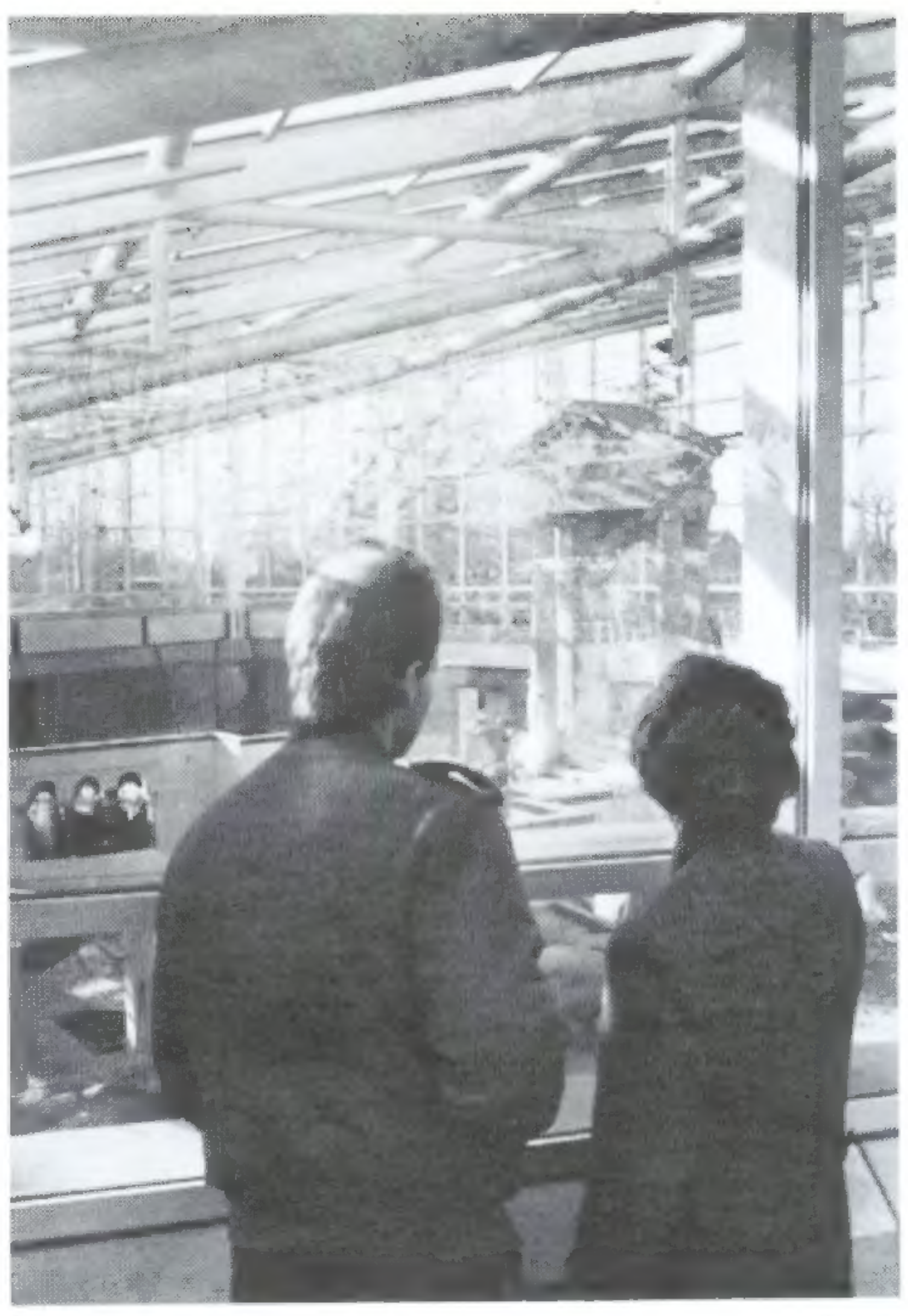
As the new plantings take root, finishing touches are being applied to the displays that will acquaint visitors with the diversity of the tropical rain forest and explain why its fragile ecosystem is so vital to our lives.

New Temperate House

The new Temperate House also will be complete for its March debut. It will feature plants that need protection from the extremes of our severe midwestern climate. The centerpiece of the new Temperate House is the "Moorish Garden", a recreation of a walled, tiled, Mediterranean-style courtyard and fountain. Visitors will wander a winding path through a wide variety of horticultural displays.

When the Climatron complex reopens in March, members and friends will be able to enjoy this magnificent jewel in the Garden, the largest single component in the $18 million capital campaign.

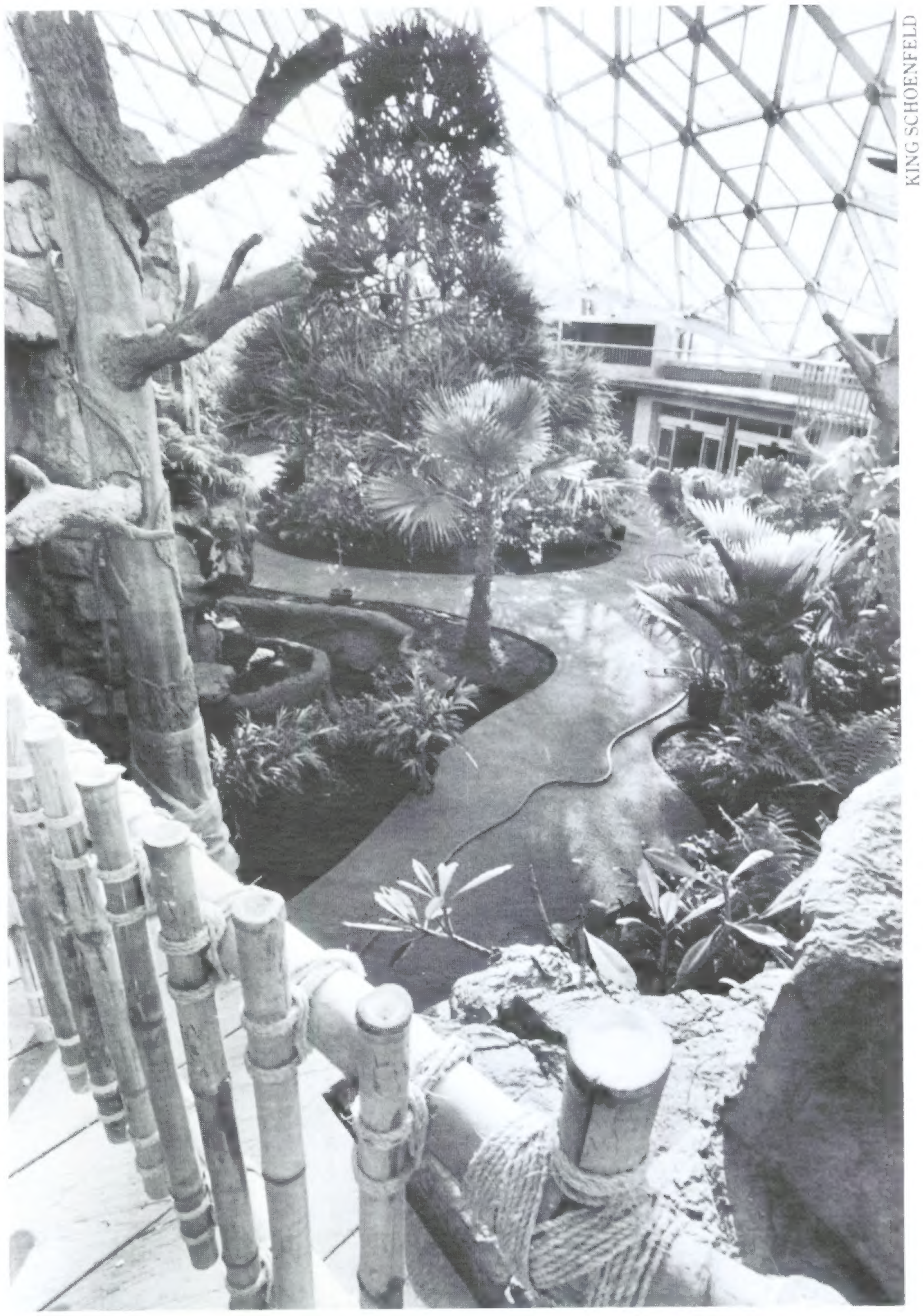




This page, far left: The new Temperate House takes shape.

Left: Interior of the Temperate House.

Below: The new Forest Bridge in the Climatron.



KING SCHOENFELD

New York Botanical Garden Donates Ferns

As part of its long-term friendship and collaboration with the Garden, The New York Botanical Garden has made a splendid gift of 140 fern plants for the Climatron. The selection includes 64 genera and 130 species.

The ferns are important because they greatly increase the number of species and genera on display at the Garden. The collection includes some rare and unusual species not commonly found in cultivation, such as the potato fern, *Solanopteris brunei,* and some paddle ferns, *Elaphoglossum* sp. The potato fern has large chambered stems inhabited by stinging ants (in nature, not in the Climatron!). In addition, there are some *Angiopteris palmiformis* which have large spreading leaves up to three meters long.

The New York Botanical Garden has an excellent living fern collection. Dr. John T. Mickel is the present pteridologist, or curator of ferns, and he collected many of the plants himself, along with Joseph Beitel of the New York educational staff. The collection was transported to St. Louis in September by Dr. Robbin Moran, the Garden's pteridologist, and Cirri Rohrbach, an assistant in the research division.

The collection is primarily tropical, from both the Old and New World tropics, and is important scientifically because the provenance of each plant is known.

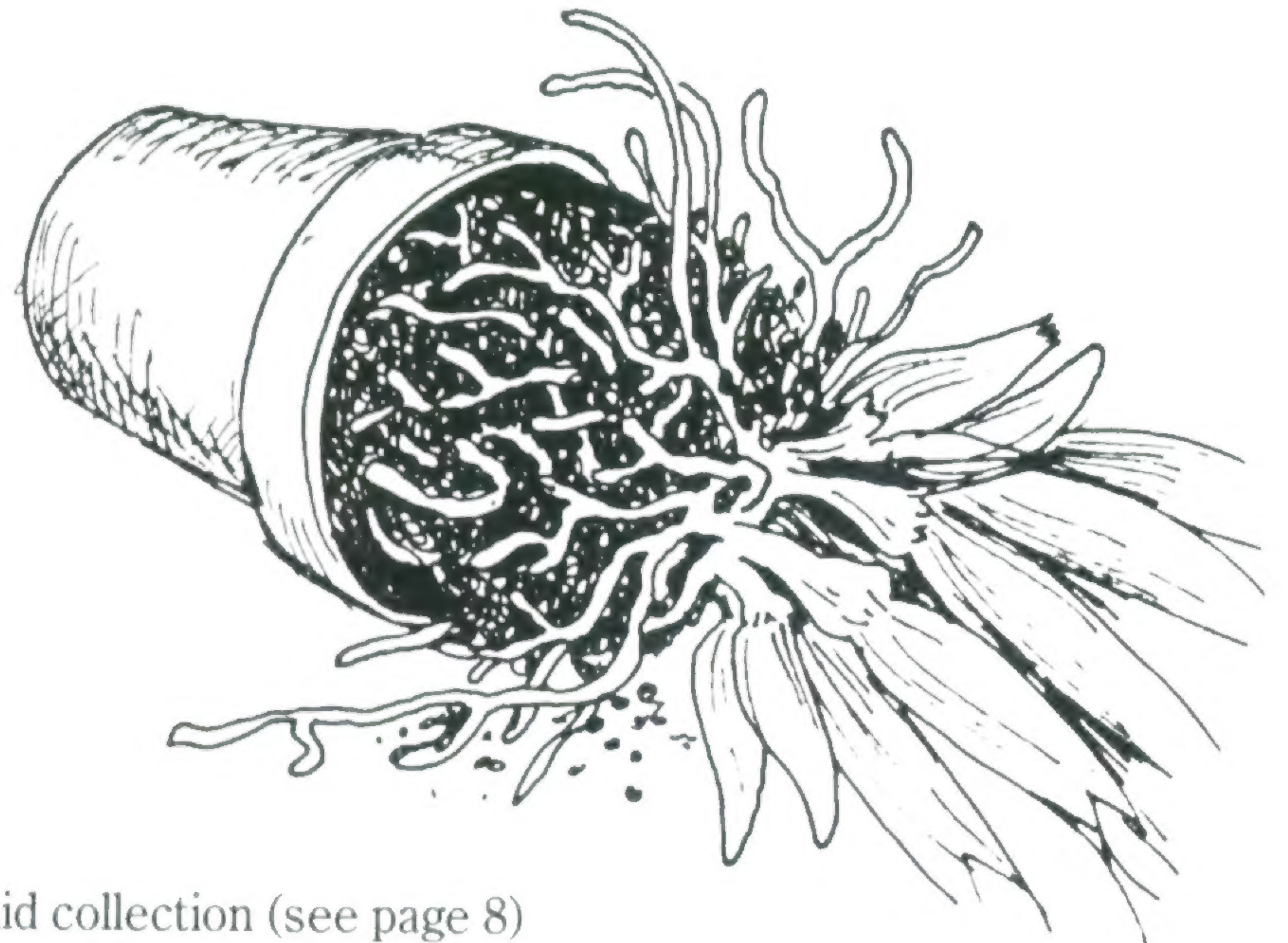
The ferns from New York will be a fine addition to the new displays in the Climatron, and the Garden is grateful for this wonderful gift.

H·O·M·E GARDENING

Orchids as Houseplants

Orchids have an undeserved reputation for being difficult to grow or to coax into flower. Since most orchids are from tropical climates where heat and humidity are constantly high, many people believe this condition must be duplicated for successful orchid growing. Most of us find it a little extreme to consider building a plant sauna in the living room. The difficulty in finding a warm and humid place in the house may be discouraging.

So, *are* orchids exotic prima donnas? Will they work as houseplants? Marilyn LeDoux, who manages the Garden's orchid collection (see page 8) passes along a few tips:



Of course, growing orchids in a greenhouse in many ways is ideal. Light conditions are optimized, temperature and humidity can be controlled, and the size of the plant is of no great concern. Nevertheless, for those of us with no plans for a greenhouse, orchids still have a place on the windowsill. Start with the easy ones of compact size: *Paphiopedilum* hybrids, *Phalaenopsis* hybrids, and perhaps a miniature *Cattleya*. These are the most dependable and adaptable orchids for the home setting. While orchids vary as to their individual requirements, it is much easier to match the plant to a setting than to modify the setting after the plant is purchased.

LIGHT

The light requirements for orchids are similar to those for other types of houseplants. The brightest position is the best place to start, as indoor orchids generally prefer bright light. The question you need to answer is, does the light in your location meet the minimum requirement for the orchid?

Measure brightness with a light meter. Low intensity conditions are those below 1,500 footcandles while bright conditions measure 3,000 to 5,000 footcandles. A south window would typically run in the 5,000 range. Moving back from the window a few feet, you will find a rapid drop in light intensity to perhaps 500 footcandles. Unfortunately, our eyes are not good judges of light intensity, something you may have discovered when first using a camera. Since we typically deal with low light indoors, chose an orchid which performs well in dimmer conditions: *Paphiopedilum*, or *Phalaenopsis*.

TEMPERATURE

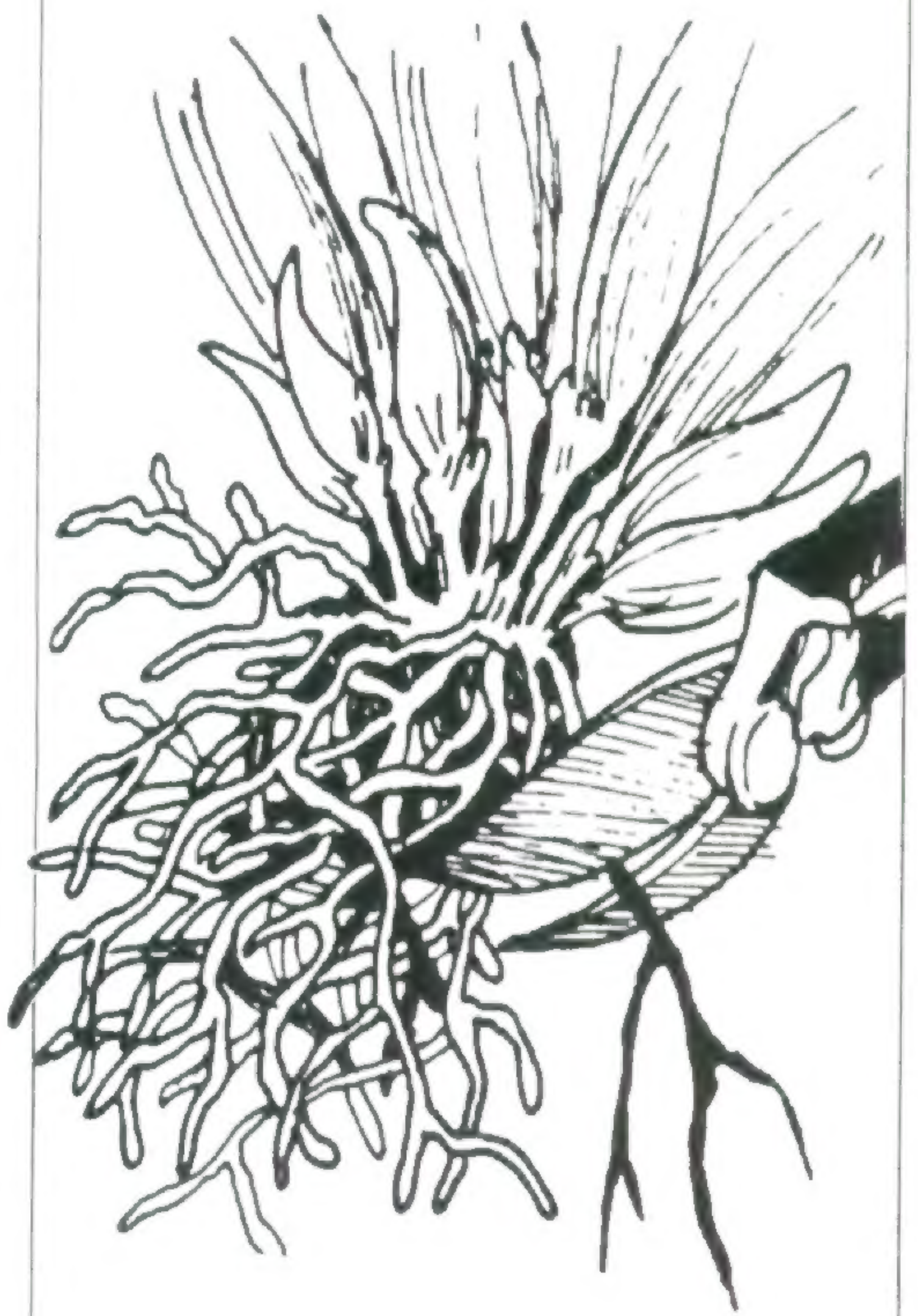
Indoor temperature directly affects flowering. Orchids are commonly classified as requiring warm, cool or intermediate conditions. A day to night temperature change of 10° to 15°F initiates flowering. Orchids grown under warm conditions might have a daytime temperature of 75° to 85°F and a night temperature of 65° to 75°F. Intermediate orchids require 65° to 75°F in daytime and 55° to 65°F at night. Cool orchid conditions are atypical for the indoors unless the space is out of the normal living area and nighttime conditions can drop into the 50s.

Generally, most orchids are very comfortable in the intermediate range (*Cattleya, Oncidium*, mottled-leaf *Paphiopedilum*) and can tolerate higher daytime temperatures than stated here. The most critical factor in selecting orchids is the nighttime temperature requirement. If you like it warmer indoors, select a warmth-loving orchid (*Ludisia* or *Phalaenopsis*) or select a location such as a window sill that cools to temperatures lower than those around your thermostat. To be sure, measure it.

HUMIDITY

One of the most confusing factors for indoor gardeners is humidity. Orchids, like many other houseplants, do well with humidities of 40 to 70 percent. Humidity is very difficult to modify effectively in the home, where we battle low air moisture of 20 to 30 percent, especially in the winter when the furnace is on.

Misting the plant does little more than provide a temporary rise in local humidity. If this is of particular concern for you, connect a humidifier to your furnace. You may also consider raising the local humidity by grouping plants together and placing them on gravel lined trays to which water has been added.

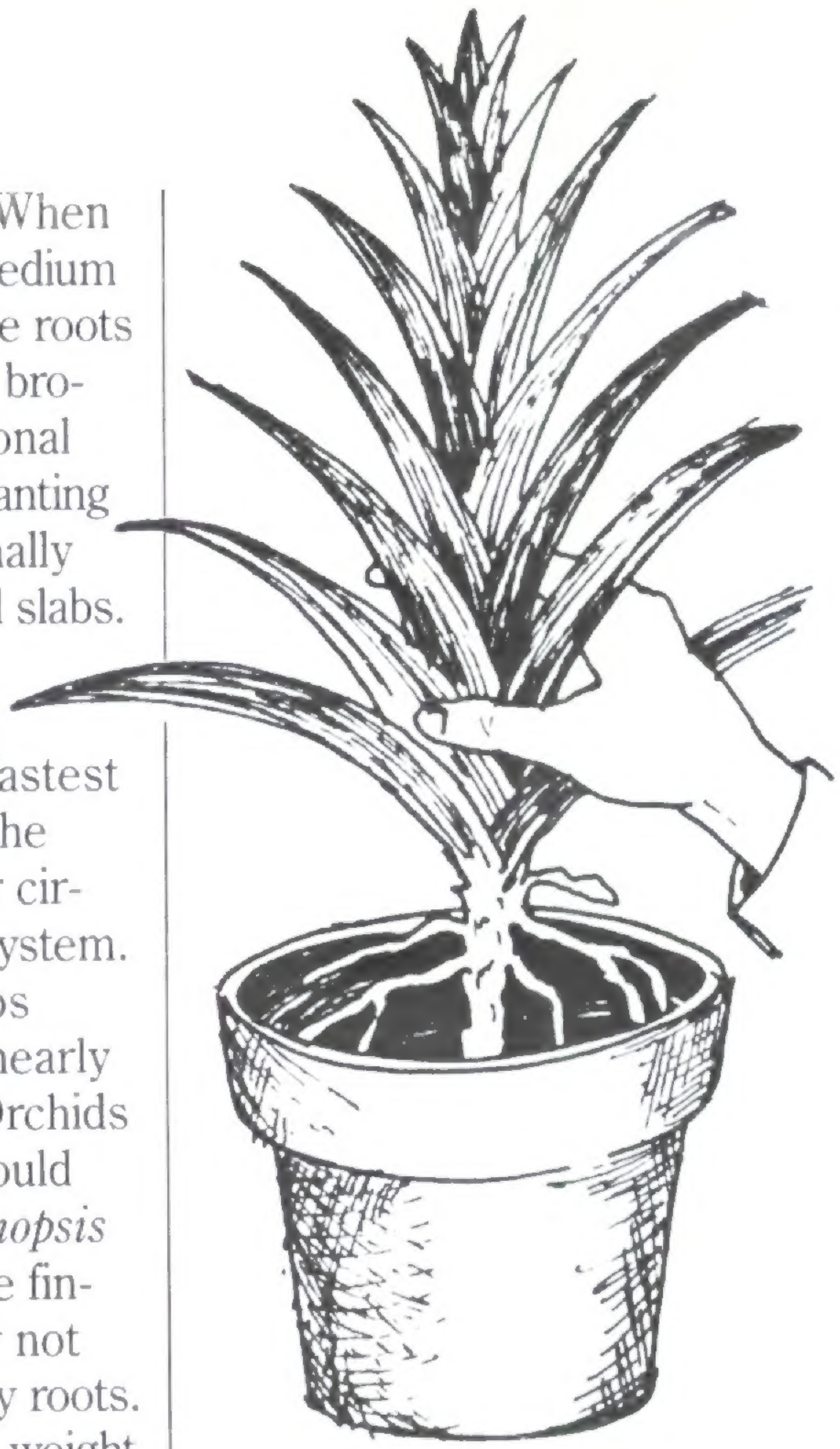


REPOTTING

Orchids that have been doing well will eventually outgrow their pots. In addition, after several years the potting medium will decompose, changing its water retention and aeration characteristics. The time to repot is after flowering and when some stubby rootlets have begun to emerge from the stem.

Repotting most orchids may seem like a bruising experience. Once the plant is dislodged from its pot, remove as much of the old potting medium as possible by shaking and washing the root system under a stream of water. Darkened roots should be removed with a sterilized knife or pruning shears. Then divide the plant by cutting the stems or rhizomes. Monopodial and sympodial types differ in how the plant is divided, and a good reference should be consulted for these details.

Repositioning the division in the new pot is followed by working in fresh potting medium. The composition of the medium will vary with the type of orchid. However, most orchid enthusiasts use fir bark that is sold as one of several grades. Medium and course bark gives the right mixtures of air and water for most orchids. Terrestrial forms like *Paphiopedilum* prefer finer bark mixes. When these are repotted, old medium should be removed but live roots should not be cut back or broken off. There are additional considerations for transplanting miniature forms traditionally mounted on bark or wood slabs.



WATERING

Overwatering is the fastest way to kill an orchid, as the majority require good air circulation around the root system. Orchids with pseudobulbs should be allowed to go nearly dry before rewatering. Orchids without pseudobulbs should remain moister (*Phalaenopsis* and *Paphiopedilum*). The finger test for dryness may not work if there are too many roots. Become familiar with the weight difference between a dry and wet pot. This is a fastest way to assess the moisture of a potted orchid.

FERTILIZATION

Orchids are efficient users of fertilizer. For potted orchids, it is sufficient to fertilize every two weeks at watering. A fertilizer with a nitrogen/ phosphorous/potassium ratio of 3:1:1 is ideal. Dilute the solution recommended on the container to half strength. It is better to fertilize more frequently with a dilute form than the other way around.

There is much information and detail on orchid growing available through books and video tapes. One place to start is with the American Orchid Society at 6000 S. Olive Avenue, West Palm Beach, FL 33405.

—Steven D. Cline, Ph.D.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at ***577-5143.***

■ Reduced light levels and lower temperatures at this time of year slow the growth of houseplants, reducing their need for water and fertilizer. Symptoms of overwatering may include yellow or dropping lower leaves, stunted growth, wilting, black or brown water spots on the leaves or soft, shriveled stems.

■ Indoor plants small enough to be moved to the kitchen sink will greatly benefit from periodic "showers" to cleanse their foliage and lessen the likelihood of insect infestations. Plants that are too large to move can have their leaves wiped with a soft, damp cloth. Do not use oils or leaf shiners.

■ Protect houseplants from cold, drafty windows. Never let the foliage touch the glass. Pull pots back at night and place newspapers against the panes for extra insulation on extremely cold nights.

■ When amaryllis (*Hippeastrum*) finish blooming, remove the spent flowers and the stalk. Keep the plant in bright light, and water and fertilize regularly through the summer.

■ Holiday poinsettias will last longer if kept evenly moist and grown in a bright but cool (65° F) room.

■ Heavy, wet snow on trees and shrubs should be brushed off promptly to avoid damage. Allow ice to melt naturally, as attempts to remove it invariably damages plants.

■ Sand, kitty litter, gravel, bird seed and wood ashes may be used outdoors to provide traction on icy paths, rather than using salt products which may damage plants.

■ Loosen mulches around perennials if they have become matted by heavy snows.

■ Dormant oil sprays can be applied to fruit trees and ornamentals on days when temperatures remain above freezing long enough for the spray to dry.

■ Fruit trees such as apples and pears can be pruned anytime after mid-February. Stone fruits such as peaches, apricots, plums and cherries should be pruned at a later date, just before breaking dormancy.

■ Hardy bulbs that have been forced in pots should have their spent blossoms removed and should be kept growing vigorously. They may be planted outdoors when conditions allow and will bloom again in subsequent years.

■ Start seedlings of broccoli, cabbage, cauliflower and kohlrabi in late February, or 6 to 8 weeks before planting outdoors.

■ Slow-growing annuals such as coleus, dusty millers, gerbera daisies, geraniums, gloriosa daisies, petunias, snapdragons, verbenas and wax begonias can be sown indoors anytime in February.

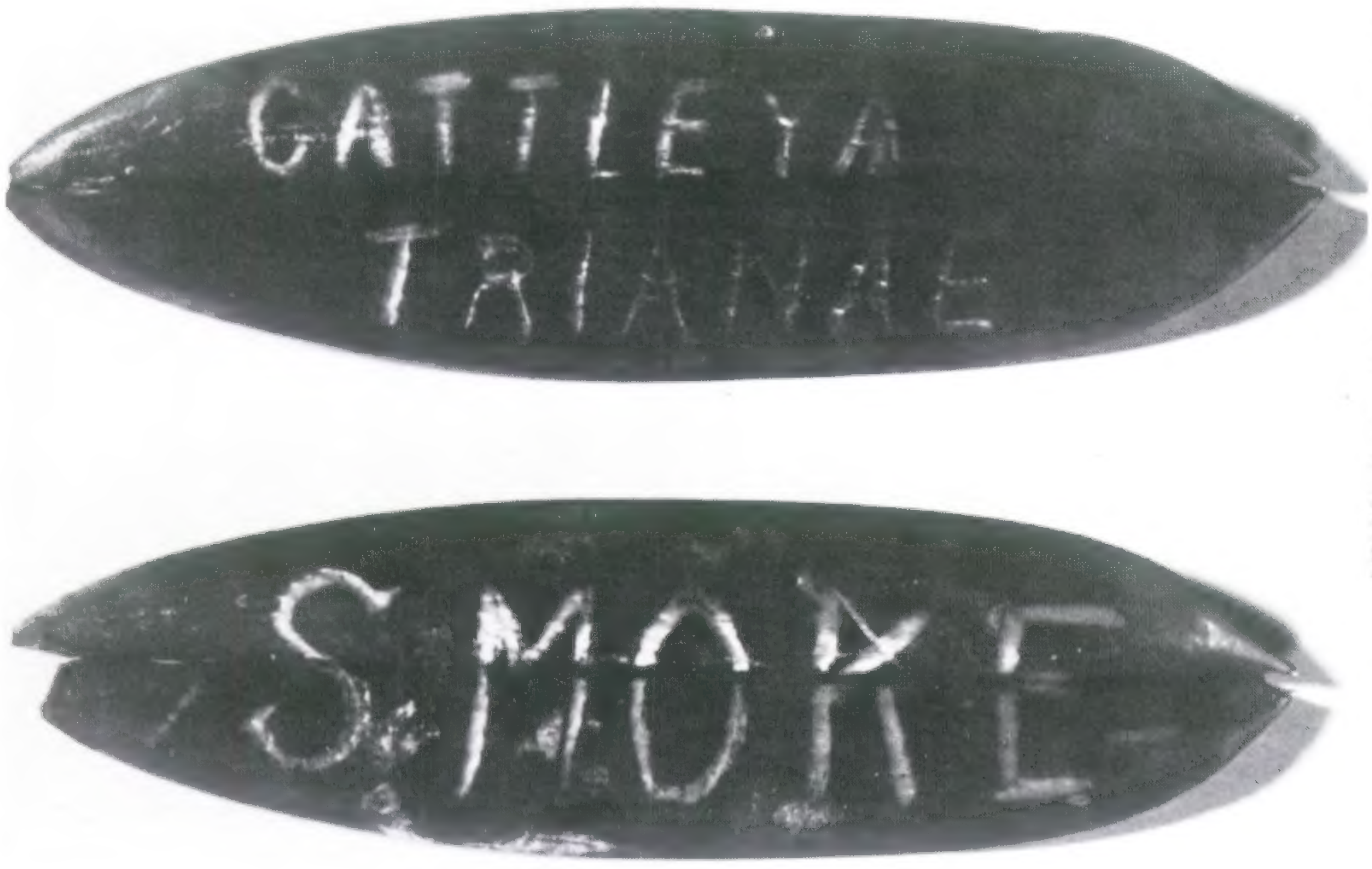
—Chip Tynan, The Answer Service

Plants at the Garden

Orchids

by Marilyn M. LeDoux

Orchids have been among the favorite display plants at the Garden since the 1870s when Mrs. Henry T. Blow presented Henry Shaw with a small group of orchids she had collected in Brazil. Mr. Shaw seems to have been smitten with "orchiditis"; at the time of his death in 1889 the Garden's collection of species, although small by today's standards, was one of the most complete in the country.



MISSOURI BOTANICAL GARDEN ARCHIVES

In 1925 smoke from coal pollution coated these *cattleya* leaves. The soot was so thick one could write on them with a moist finger.

In 1906 a young man who was to be instrumental in the future of the Garden's orchid collection came to St. Louis from England and began working as foreman of the orchid and exotic department. In the next five decades George H. Pring would play a major role in the development of one of the largest and most famous orchid collections in the world.

A friendship soon developed between Pring and Mr. D. S. Brown of Kirkwood. Brown was the first person in the St. Louis area to amass a sizable orchid collection and had been known throughout the world for years. In 1918, due to World War I, coal was in very short supply and Brown was having serious difficulties heating his three large greenhouses. The Garden had been given a special government permit to burn sufficient coal to maintain all permanent collections of tropical plants, and Brown donated his entire collection of approximately 3,000 orchids to the Garden.

It thus became possible to stage special floral displays of orchids as never before. In December of 1918, as a portion of the holiday floral display, several hundred blooming orchid plants were exhibited in the largest orchid display ever held in St. Louis. Dominating the exhibit were *Paphiopedilum* orchids from Brown's collection.

In 1923 the Garden decided to obtain more plants for display purposes, and George Pring was sent on a six-month collecting expedition to Colombia. He returned with approximately 5,000 cattleyas. These amounted to 40 burro loads, or nearly eight tons, of orchids. As a result of Pring's expedition the Garden was able to schedule its first flower show devoted exclusively to orchids, to begin Sunday, November 30, 1924.

However, in those years St. Louis had severe air pollution problems due to coal smoke. During late October the outlook for the orchid show was ominous. For an entire week the city was enveloped in a dense cloud of smoke and all open orchid flowers and exposed buds collapsed. Luckily, the buds still in sheath were protected, and by opening day more than 1,000 plants were in bloom. On that Sunday, between 1 p.m. and 5 p.m., 8,000 people passed through the Floral Display House.

Plans were developed to move the entire orchid collection outside the city to escape the air pollution. In 1925 the Garden purchased 1,300 acres near Gray Summit, Missouri, and immediately began construction of a greenhouse range to house the plants. All 15,000 orchids had been moved by the end of 1926 and immediately began to show marked improvement.

By that time the Garden's collection was considered by many to be the best of any public institution in the world. However, if the Garden was to maintain this supremacy, raising seedlings on a major scale would have to begin. Therefore, in 1927 an orchid seedling department was organized and Elinor Alberts of Louisville, Kentucky, was hired to run the laboratory. Not many persons were experienced in orchid seedling work at that time; it was especially rare for a woman to be doing this type of work. The program was very successful and many Garden hybrids were produced in the ensuing years, most of which were superior to species in vigor, size, color, and texture.

In the 1930s, 1940s, and 1950s the collection continued to grow and improve, thanks in large part to the enthusiasm and support of the Garden's director, Dr. George T. Moore. The Garden exhibited orchid displays in a number of major United States cities and received many first place awards. Also during those years a number of major donations of plants were received and Garden-produced hybrids continued to grow and bloom. In 1954 the First World Orchid Conference was held in St. Louis. Pring, a trustee and judge of the American Orchid Society, was chairman of the committee on arrangements for the conference. Over 600 persons attended.

In the late 1930s smoke abatement laws had been passed and by the 1940s, the air of St. Louis had greatly improved. In 1958, Dr. Hugh Cutler, acting Director of the Garden, made the decision to move the orchid collection back to the city so that it would be more accessible to visitors and research staff. Of the 60,000 mature orchids in 16 large greenhouses, only about 25,000 would fit into nine smaller city greenhouses. The most desirable selections were kept; the remainder were sold or discarded. This meant the elimination of the Garden's hybridization program, cut-flower sales (which covered all of Shaw Arboretum's operating costs), and status as the largest and finest orchid collection in the world. It was the end of an era.

George Pring retired from his post as the Garden's superintendent early in 1963, having been at the Garden for 57 years. He had been instrumental in the phenomenal growth and success of the orchid collection over the years and had been an American Orchid Society trustee, judge, and honorary vice-president. Even after his retirement he continued to volunteer as "Answer Man" for a number of years.

In the 32 years since returning to the city of St. Louis, the collection has decreased in overall numbers but has remained relatively stable in more recent years with approximately 10,000 plants. Today's emphasis is on improving the display collection while still retaining species and older, historic hybrids. Even today Missouri Botanical Garden has a large, fine orchid collection.

Marilyn M. LeDoux is the curator of Missouri Botanical Garden's orchid collection. She has worked at the Garden since 1979 and has been in charge of the orchid collection since 1984. Originally from Mexico, Missouri, she received a bachelor of science degree in horticulture from the University of Missouri at Columbia.

MISSOURI BOTANICAL GARDEN ARCHIVES

Top: The Garden's first orchid show, in the Floral Display House, Sunday, November 30, 1924. 8,000 people came on opening day.

Center: Cyril Allen (left), guide, and Garden horticulturist George Pring collecting orchids in the Andes of Columbia, 1923.

Below: D. S. Brown in one of his orchid houses in Kirkwood, Missouri. Brown donated his entire collection to the Garden in 1918.

England Provides Inspiration for Center for Home Gardening

Dr. Steven D. Cline, manager of the Center for Home Gardening, recently returned from a two-week, 500-mile tour of seven public gardens in England with a wealth of ideas for the Center.

"The English are a nation of gardeners," Cline explained. "They have had centuries to develop their skills and their gardens. Their enthusiasm for growing things is enhanced by the patience required to let things grow, and a respect for conservation.

"Most English display gardens are simply that, magnificent displays," Cline continued. "We plan to go one step further here, combining examples of different types of gardens with programs that teach people *how* to create them."

Hedge and ground cover displays, and comparative turf plots, were some of the most interesting ideas Cline found in England. Other potential developments for the Center, inspired by the English gardens, include displays of small fruits (gooseberries, raspberries, currants), and a winter garden, featuring plants with colorful stems and bark, winter blooms, and beautiful shapes against a backdrop of evergreen.

"I also found a wonderful example of a garden for the disabled at Capel Manor, near London," Cline said. "As we plan our area for disabled gardeners, we will be able to use many of these ideas, including special paths, raised beds of the proper height with rounded corners, rails, and systems of pulleys.

"Most of all, we plan to encourage the love of plants and gardening that I saw in England. It's contagious!" Cline said.

KING SCHOENFELD

Participants included (left to right): Shoichi Kawano, Marshall R. Crosby, Peter H. Raven, Dan H. Nicolson, James L. Reveal, F. Nigel Hepper, Barbara G. Briggs, Joseph Ewan, Emanuel D. Rudolph.

A Century of Botany

The past 100 years of botany was the focus of the 36th annual Systematics Symposium held at the Garden October 6–7, 1989.

The sold-out audience numbered 425 participants, mostly professors and students, from 15 different countries. Symposium speakers came from as far away as London, Australia and Japan. The discussions considered the changes in the theory and practice of systematic botany over the past century, and looked toward the future of the discipline.

The keynote speech, "One Hundred Years of the Missouri Botanical Garden," was delivered by Prof. Emanuel Rudolph of Ohio State University. Prof. Rudolph currently is writing a book about the first 100 years of the Missouri Botanical Garden under its Board of Trustees. 1989 marked the 100th anniversary of the death of Henry Shaw, founder of the Garden, and the establishment—according to the terms of Shaw's will—of the Board of Trustees.

Held annually since 1953, the symposium has long provided a forum for scientific discussion and thought for the botanical community. It is designed to foster interaction among systematic biologists, and always is well-attended. The proceedings from the symposia are published in the *Annals of the Missouri Botanical Garden.*

New Specimens for Herbarium

The Garden's herbarium is one of the largest (3.7 million specimens) and most active in the world. Because of its preeminence, botanists often donate or sell their specimens to the herbarium, where they know their specimens will eventually be used by taxonomists from all over the world. Recently, the Garden's herbarium acquired three sets of specimens that significantly broaden the scope of the collection.

The first set is a gift of 960 tropical American ferns sent by the British Natural History Museum for identification by Garden pteridologist, Dr. Robbin Moran. The ferns will be identified by Dr. Moran, who will then send his list of identifications to the British Natural History Museum where the names will be put on duplicate specimens.

The second set is a gift of 622 ferns donated by Dr. Alice Fay, a botanist from Georgia, who collected ferns in Bolivia for nine weeks this past summer. While in Bolivia, Dr. Fay worked with the Garden's field botanist in that country, Dr. David N. Smith. These ferns also will be identified by Dr. Moran and a list of his identifications sent to the Bolivian National Herbarium in La Paz, where duplicates have been kept.

The third set of plants was purchased from Belgian botanist Jose Lewalle, who collected the 6,700 specimens in the African country of Burundi from 1965–1972. The set was purchased by Dr. Peter Goldblatt, the Garden's B.A. Krukoff Curator of African Botany, with funds donated by the late Mr. Krukoff, a private botanist who endowed two Ph.D. research positions at the Garden. Lewalle's collections are important because they document the flora of this botanically poorly known African country, which is located between Zaire and Tanzania.

Duplicates of Lewalle's specimens are on deposit in Brussels and at the Kew Herbarium in London. The Garden's herbarium has the largest collection of African plants in the United States and is the North American center for the study of African botany.

RICHARD BENKOF

Peter H. Raven, left, with Ricardo Rueda

First Peter H. Raven Fellow Announced

The University of Missouri-St. Louis, which offers a collaborative graduate program in plant systematics, ecology, and evolution with the Missouri Botanical Garden, announced that the 1989 Peter H. Raven Fellowship in Tropical Botany has been awarded to Mr. Ricardo Rueda. The Fellowship was established by Chancellor Marguerite Ross Barnett in honor of the Garden's director, Dr. Peter H. Raven, and the first award in Fall 1989 coincides with the establishment of the doctoral program in Biology at the University.

Mr. Rueda received his B.S. degree in Biology from Universidad Nacional Autónoma de Nicaragua—León in 1983, and came to the UM-St. Louis graduate program in 1987 under the auspices of the Fulbright Latin American Scholarship Program of American Universities. He will receive his M.S. degree from UM-St. Louis in December 1989 with a thesis entitled "Revision of the genus *Clerodendrum* (Verbenaceae) in Mesoamerica". In competition with other doctoral students, Mr. Rueda was selected to receive the award by the Biology Graduate Committee, and will use his fellowship to pursue doctoral studies of the plant family Verbenaceae in Central America. ■

WORLDWIDE NETWORK

A NEW ERA OF INFORMATION

The Garden today finds itself on the threshold of a new era in the synthesis and sharing of information. Computerization of botanical research, facilitated by the Garden's TROPICOS database system, is bringing scientists together in a global network with far-reaching implications. To further these efforts, and to continue collaboration on important botanical research, scientists from the Garden recently visited both the Peoples' Republic of China and the U.S.S.R.

Delegation Visits China

In late August the Flora of China editorial committee held its second meeting at the South China Institute of Botany in Guangzhou. Attending from the Garden were Dr. William Tai, coordinator of the project, Dr. Peter H. Raven, co-chairman of the editorial committee, and Dr. Nancy Morin, director of the Flora of North America.

The Flora of China is a project to revise, condense, and translate into English the *Florae Republicae Sinicae*, an 80-volume work begun by the Chinese in 1959 (see the *Bulletin*, November-December 1988). The Garden serves as the U.S. activity center for the project, which recently received a $140,000 first-year grant from the National Science Foundation. Flora of China will result in 25 volumes published in a 12-year period and will cover about 30,000 species. (In contrast, there are only about 20,000 species in North America north of Mexico.) Flora of China is an extraordinary undertaking that will make the wealth of research by hundreds of Chinese botanists accessible to the world at large.

The purpose of the editorial committee meeting was to make final decisions on style and content and to choose a publisher. Much to everyone's pleasure, an agreement was reached that Flora of China will be published jointly by Science Press, the publisher for the Chinese Academy of Sciences, and Oxford University Press-New York.

Dr. Raven, Dr. Tai and Dr. Morin enjoyed their stay in Guangzhou, formerly Canton, the beautiful main port city of southern China. The group also visited Beijing, where they participated in several meetings with Chinese officials and scientists concerning conservation and biodiversity in China.

TROPICOS and the Flora of China

While in China the Garden delegation had the exciting experience of seeing TROPICOS in action. (See the *Bulletin*, January-February 1989.) TROPICOS is being used to capture information gathered as part of the Flora of China project. Four data entry centers have been established in China, one each in Beijing, Nanjing, Kunming, and Guangzhou. Staff from each center have been trained at Beijing in the use of the computer and programs, and the Botany Institute in Beijing coordinates the data entry efforts. Dr. Gu Hong ya, who recently completed her Ph.D. at Washington University under the direction of Dr. Raven, gave the training session and supervises the data entry activities.

The use of TROPICOS for the Flora of China is particularly significant, as it will allow the information to be compared directly with the Flora of North America. The plants of China and North America share important characteristics, and these kinds of detailed studies have never before been possible.

> **Computerization is**
>
> **bringing scientists together**
>
> **in a global network with**
>
> **far-reaching implications.**

A Trip to the U.S.S.R.

Two weeks after returning from China, Dr. Raven, Dr. Morin, and Dr. Marshall R. Crosby left for the U.S.S.R. Botanists there also are concerned with conservation and the study of biodiversity, and they are developing strategic plans that incorporate computerization in trying to meet those concerns. Meetings between the Garden botanists and the staff of the Komarov Botanical Institute in Leningrad and the Main Botanical Garden in Moscow resulted in cooperative agreements to coordinate our research and computerization efforts. Particularly exciting in relation to Flora of China and Flora of North America is the prospect that the Flora of the U.S.S.R. will be revised and computerized, and that the computerized information will be linked also to the living collections in botanical gardens.

A Global Network

Flora of North America, headquartered at the Garden, has been instrumental in beginning this new era of information synthesis and sharing. Land managers and conservationists desperately need accurate, accessible information to make informed decisions. They also have valuable data to share with researchers. Computerization is the most effective means for making this information easily and widely available. Use of compatible systems also permits combining, comparing and studying that information in new and exciting ways.

Flora of North America is a very important part of the international network that includes China and other areas in Asia, the Soviet Union, Europe, Mesoamerica, and parts of South America. This network will contribute significantly toward development of a comprehensive, computerized flora of the world.

Flora of North America is supported by grants from the National Science Foundation, The Pew Charitable Trusts, and by participating institutions.

Missouri Botanical Garden

CALENDAR OF EVENTS

January-February 1990

JANUARY 27-FEBRUARY 25 Orchid Show

9 a.m. to 5 p.m. daily, Orthwein Floral Hall. Escape from the cold and snow with a trip to the tropics! Step into a dazzling world of orchids displayed in their natural tropical surroundings. Regular Garden admission. *Members' Preview—see January 26.*

JANUARY & FEBRUARY

WALKING TOURS

Now All Tours Begin at 1:00 p.m.

Join us every Tuesday, Saturday and Sunday at 1:00 p.m. for a tour led by Garden Guides. Enjoy the winter landscape and learn about architecture, history, sculpture and horticulture at the Garden. Meet at the Ridgway Center ticket counter. Free with regular Garden admission.

JANUARY

3-4 WEDNESDAY THURSDAY

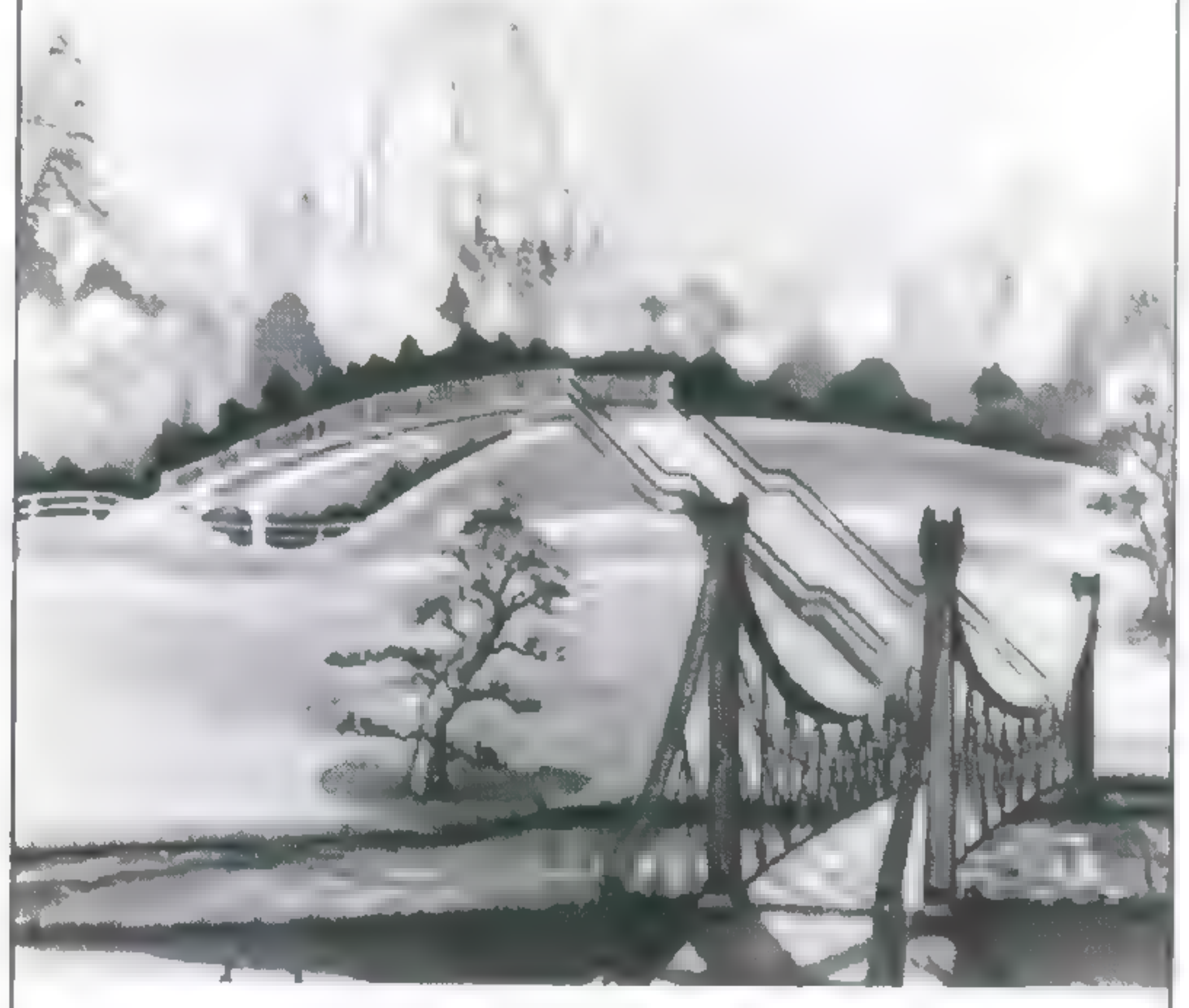
Gate Shop Closed

9 a.m. to 5 p.m. daily, the Garden Gate Shop is closed for inventory.

5-6 FRIDAY SATURDAY

Clearance Sale

9 a.m. to 5 p.m. daily, Garden Gate Shop. Members receive 20% discount on all sale merchandise. Come sample the greatest bargains of the year!



The Japanese Garden winter landsc

26 FRIDAY

Members' Preview: Orchid Sh

5 to 8 p.m., Orthwein Floral Hall
Get first look at a breathtaking
display of these magnificent bloo
Entertainment, cash bar. Garde
Gate Shop will be open. Dinner b
fet available in Gardenview Resta
rant. For Members only; watch
your mail for details.

Orchid Sale

9 a.m. to 7:30 p.m. Friday; 9 a.
to 5 p.m. daily through February
Garden Gate Shop. Members
receive 20% off on all orchid pla
Shop early for the best selection

**JANUARY 27–
FEBRUARY 25
Broad Spectrum Art Exhibit**

9 a.m. to 5 p.m. daily, Ridgway C
ter. A display of paintings of gard
and wildlife. Broad Spectrum is a
group of artists who meet regula
to critique their work and share
ideas. Free with regular Garden
admission.

FEBRUARY

1 THURSDAY

Broad Spectrum Workshop

1 to 3 p.m., Ridgway Center. Margery Imster, who founded Broad Spectrum 15 years ago, will host a workshop on collage techinques for amateur artists. Reservations are required and can be made by calling 577-5125 beginning Monday, January 22. Enrollment is limited. Free with regular Garden admission.

4 SUNDAY

Orchid Society Lecture

2 p.m., Shoenberg Auditorium.
noted member of the American
Orchid Society will show slides a
discuss these popular plants. $1.
Members, $2 non-members.
Limited seating.

8 THURSDAY

Gardening by Design Lecture

1 and 8 p.m., Shoenberg
Auditorium. First in a series of si
lectures. Dr. Alex Shigo, formerl
chief scientist for the U.S. Forest
Service for 26 years, discusses
"Common Sense Tree Care fro
the Nursery to the Landscape." S
highlight.

KING SCHOENFELD

JANUARY 31 / MEMBERS' DAY
"Plants of the Future"

11 a.m., Shoenberg Auditorium. Eliot Wadsworth, former owner/editor of *Horticulture* Magazine and owner of the renowned White Flower Farm in Litchfield, Connecticut, will discuss exciting new plants soon to be available. Seating is limited, for members only. Free.

FEBRUARY 13 / MEMBERS' DAY
"Tropical Rain Forests in Costa Rica"

1 and 7:30 p.m., Shoenberg Auditorium. Assistant curator Dr. Barry E. Hammel will discuss the rain forests of Costa Rica. Limited seating, for members only. Free.

FEBRUARY

continued

5 THURSDAY

rdening by Design Lecture

nd 8 p.m., Shoenberg
ditorium. Topic to be announced.

2 THURSDAY

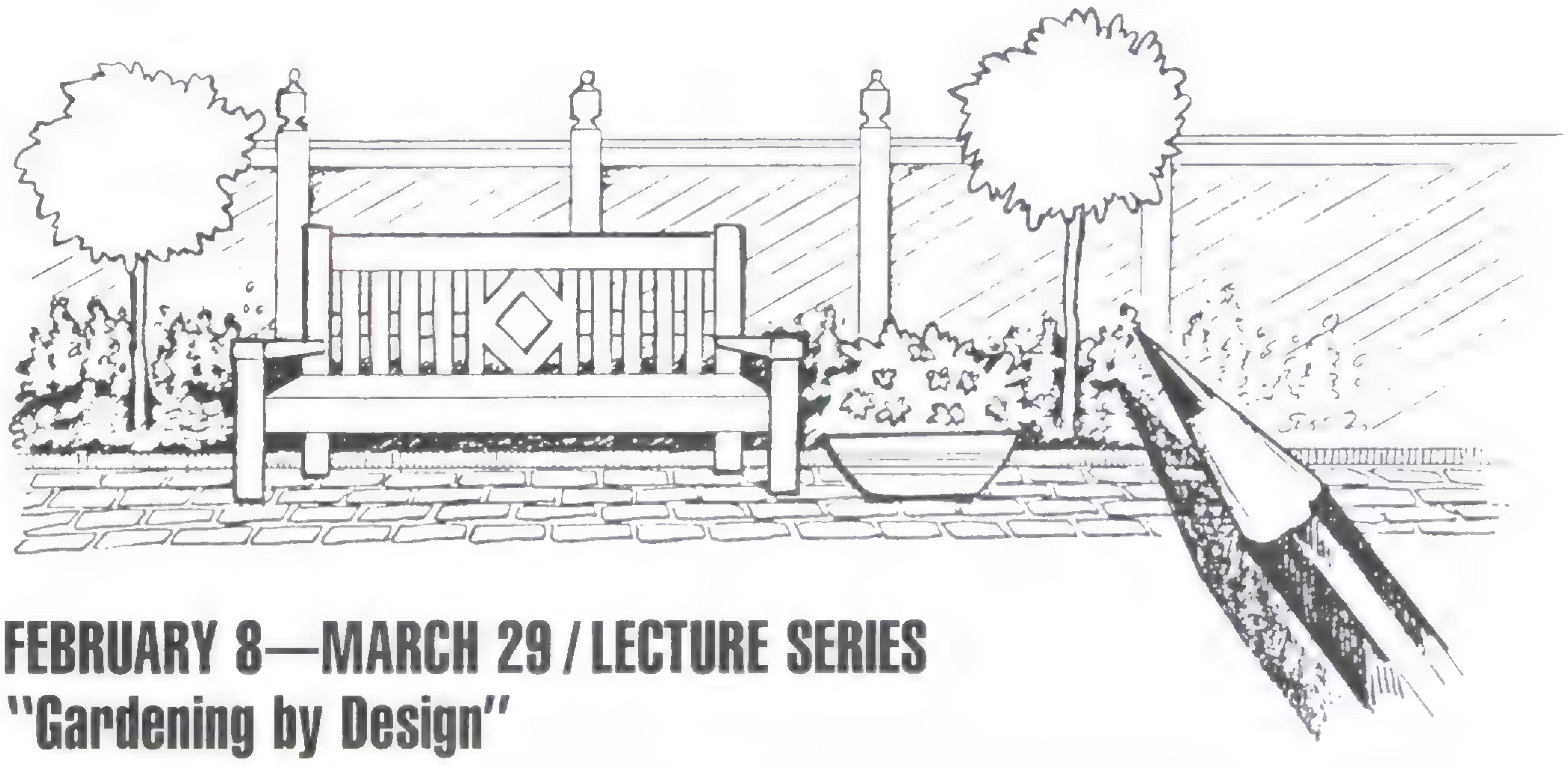
rdening by Design Lecture

nd 8 p.m., Shoenberg
ditorium. Topic to be announced.

4-25 SATURDAY & SUNDAY

ring Gardening Fair

.m. to 5 p.m. daily, Ridgway
nter. Displays, lectures and
esentations on gardening by
aster Gardeners, the St. Louis
rb Society, local nurseries and
wer societies, co-sponsored by
e *St. Louis Post-Dispatch*.
aturing a special appearance by
n Wilson of TV's "Victory Gar-
n" on Saturday. Advance
gistration and fee required for
tures. See ad in *Post-Dispatch* or
l 577-5125 for more information.
gular Garden admission.



FEBRUARY 8—MARCH 29 / LECTURE SERIES
"Gardening by Design"

Once again the Garden hosts this popular series. Expert horticulturists and landscape architects will discuss a variety of gardening topics. Presented on Thursdays, February 8, 15, 22, and March 15, 22 and 29, at 1 and 8 p.m., in Shoenberg Auditorium. Tickets will be available by subscription for the afternoon or evening series, $20 members, $25 non-members. Single tickets will be available on the day of the lecture, *only if the series is not sold out*: $4 Members, $5 non-members. Watch your mail for registration information.

NEWS FROM TOWER GROVE HOUSE

Restoration Continues

The restoration of the furnishings of Tower Grove House is progressing, with the switch of two upstairs bedrooms to reflect accurately the arrangement of the house in Henry Shaw's lifetime. Research has discovered that Mr. Shaw actually used the southwest back bedroom instead of the northwest front bedroom for himself. The furnishings are being moved, and new carpeting is being installed. The changes will be completed by February 1.

All of the furniture is now completely restored in Henry Shaw's office on the main floor.

Admission Increase

Effective February 1, 1990, admission to Tower Grove House will be $2 for adults (age 13 and over); $1.50 per adult in groups of 15 or more; and $.50 for children ages 6 to 12. Children under age 6, and Garden members, are admitted free.

HONORARY TRUSTEES ARE NAMED

The Board of Trustees is pleased to announce the election of Professor Phillippe Morat and Dr. Mildred E. Mathias as honorary Trustees of the Garden.

In his Will, Henry Shaw named Asa Gray, the professor of botany at Harvard University who had been his close advisor, and Spencer Baird, then secretary of the Smithsonian Institution, as honorary Trustees. Shaw selected both men by virtue of their scientific eminence. Both men predeceased Shaw, and the positions were never filled. The courts have ruled, however, that Shaw did create positions for two honorary Trustees on the Board, and in honor of the Board's centennial year, the Trustees elected both Morat and Mathias to four-year terms on March 24, 1989.

Prof. Morat and Dr. Mathias will be honored guests at the annual Henry Shaw Dinner on January 23rd.

PHILLIPPE MORAT

Prof. Phillippe Morat, director of the Laboratoire de Phanérogamie, Muséum National d' Histoire Naturelle, Paris, has long been one of the Garden's most distinguished collaborators. The Laboratoire de Phanérogamie is part of the national herbarium of France, one of the richest collections of plant specimens in the world, with more than eight million accessions.

Morat, a plant systematist, has a distinguished background in tropical botany. Born in Saigon in 1937, he has earned degrees from the Universities of Lyon, Toulouse, Montpellier and Paris. He directed ORSTOM research centers in Madagascar and New Caledonia before his appointment to the National Museum of Natural History. ORSTOM—Office de Recherches Scientifiques et Techniques d' Outre Mer—maintains scientific research centers in a number of foreign countries.

Morat first worked with researchers from the Garden in Madagascar and again in New Caledonia, where Garden curator Gordon McPherson was coordinating a program of exploration and research. Porter P. Lowry II, coordinator of the Garden's research program in Madagascar, enjoys the use of an office and laboratory space at the Laboratoire Phanérogamie in Paris, and several researchers at the Laboratory specialize in the flora of Madagascar. Peter Goldblatt, the Garden's B.A. Krukoff Curator of African Botany, has spent the past two summers at the Museum as a visiting scientist.

Morat is a specialist in the flora of Madagascar and New Caledonia and has played an important role in promoting botanical study of these regions. He has undertaken a comprehensive analysis of the composition and evolutionary history of the unique plants of New Caledonia.

MILDRED E. MATHIAS

Mildred Mathias is one of the Garden's most distinguished alumni. Born in Sappington, Missouri, in 1906, she earned her A.B., M.A., and Ph.D. degrees from Washington University. She was the Jessie R. Barr Fellow at the Henry Shaw School of Botany, 1927-29, and worked as a post-doctoral research assistant at the Garden in 1929-30, with responsibility for the Herbarium. Her lifelong specialization in the Umbelliferae (carrot) family began during her years at the Garden, where she studied with such distinguished teachers as George T. Moore, Jesse More Greenman, and Edgar Anderson. She is recognized as the one of world's leading authorities on the Umbelliferae.

Mathias went on to become a professor at the University of California, Los Angeles, where she directed the Botanical Gardens, which are named for her, and its Herbarium. Mathias became professor emeritus at UCLA in 1974. She is the author of more than 200 popular and scientific publications.

Throughout her career, Mildred Mathias has made outstanding contributions to botanical teaching, research and administration; to ornamental horticulture; and to conservation groups both local and international. She served as a Board member and president of the Organization for Tropical Studies, and was a founding force behind the Las Cruces and Lankester Botanical Gardens in Costa Rica. She served as president and Board member of the Southern California chapter of the Nature Conservancy, as well as at the state and national level. Mathias' honors, awards, memberships in professional societies, and achievements are extraordinary in both number and scope.

G. PAUL BISHOP

Mildred E. Mathias

Dr. Peter H. Raven, director of the Garden, said, "It is with the greatest pleasure that we announce these appointments. The Garden is honored by the presence of these two distinguished scientists on our Board of Trustees, and we look forward to their visit here in January."

Trustee Profile

H. C. MILFORD JOINS BOARD OF TRUSTEES

H. C. Milford joined the Board of Trustees recently as an *ex-officio* member when he was appointed St. Louis County Executive following the resignation of Gene McNary. He will be one of eight Trustees serving on the Board by virtue of their positions.

Milford was a member of the St. Louis County Council for eleven and a half years prior to his appointment as County Executive. A graduate of the University of Missouri, Milford has been a St. Louis County resident throughout his life. Active in local organizations, he has been a life member of the University of Missouri Alumni Association and has held various positions in the Lions Club and other civic organizations.

Milford is the second Trustee to fill this position, which was added to the Board one year ago. McNary was the first to serve. According to County Councilwoman Ellen Conant, "Mr. Milford supports city-county cooperation. He knows institutions such as the Garden benefit all of us."

Dr. Peter H. Raven, director of the Garden, said, "We are delighted to have Mr. Milford as a Trustee. We look forward to working with him, and his expertise will be a great asset to the Board."

Prior to his appointment, Milford was vice-president of Alexander & Alexander, an insurance brokerage firm.

Behind the Scenes

Garden Appoints Education Director

Dr. Larry DeBuhr has been named director of the Missouri Botanical Garden's Education Division. He will begin in January 1990.

As director of the Education Division, DeBuhr will be responsible for the Garden's extensive educational activities. In addition, he will strive to develop new opportunities for the Garden to assist St. Louis-area teachers.

Dr. Peter H. Raven, director of the Garden, said, "Education is a crucial component of the Garden's activities. We are delighted about this appointment, since Dr. DeBuhr's scientific expertise and educational background make him ideally suited for this important position."

DeBuhr holds Ph.D. and M.A. degrees in botany from the Claremont Graduate School in association with Rancho Santa Ana Botanical Garden in Claremont, California, and a B.S. from Iowa State University.

An assistant professor at University of Missouri-Kansas City, DeBuhr has been heavily involved with science education throughout his career. In addition to teaching, he currently co-directs the Metropolitan Kansas City/Elementary Science Specialist Program, a collaborative program between the University of Missouri-Kansas City and 15 urban school districts in greater Kansas City. He also directs an Elementary Science Institute for Magnet School teachers and helps write and implement the science curriculum for Knotts Environmental Science Magnet School.

DeBuhr has extensive administrative experience not only with grant-funded programs, but within the academic community. He served for three years as assistant director of the University of Missouri-Kansas City Center for Academic Development, and served as acting assistant vice-chancellor for Student Affairs.

This experience uniquely qualifies DeBuhr to head up the Garden's education program, which encompasses courses taught at the Garden, as well as teacher training, development of model curricula and teaching materials, and outreach programs, such as instructional programs in two magnet schools.

Larry DeBuhr

Garden Participates in GreenLeaf Program

A plot of land at 3300 N. 11th Street in Trinity Square in St. Louis's Hyde Park neighborhood will receive landscaping and tree planting thanks to Union Electric Company's GreenLeaf Program, established this fall to focus on tree planting and energy conservation issues. Neighborhood groups submitted plans in a competition for the landscaping. Robert Bowden, the Garden's director of horticulture, was one of the consultants to the judges.

The GreenLeaf Program is part of Union Electric's commitment to national and local Global ReLeaf efforts, a public education campaign to increase awareness of the threat of global warming and the positive measures that can be taken to mitigate that threat through planting trees. William E. Cornelius, chairman and chief executive officer of Union Electric Company, and Peter H. Raven, director of the Garden, are co-chairmen of St. Louis Area Global ReLeaf.

FROM THE MEMBERSHIP OFFICE

Members Celebrate 50 Years

Past and present Board members were honored at a reception held in the Spink Pavilion on October 16, 1989, celebrating 50 years of Garden membership. Dr. Raven praised the Board members for their crucial role in establishing and promoting a members' program that today numbers over 24,000, the second largest botanical garden membership program in the United States.

Guests received a special copy of the history of the membership program, compiled and written by Mrs. Landon Y. Jones and Geraldine Epp Smith. The reception was organized by Board members Sue Oertli and Mim Kittner.

Special thanks go to all those members who contributed so much to the Garden over the past 50 years.

KING SCHOENFELD

PAST PRESIDENTS OF THE BOARD shown at the reception (above, left to right, front row): Mrs. James Alfring (Mary Ella), Mrs. William Bixby (Helen), Mrs. Henry W. Dubinsky (Ellen), Mrs. Landon Y. Jones (Ellen). Left to right, back row: Mrs. Walter G. Stern (Nora), Mrs. Shadrach F. Morris (Isabelle), Mrs. Charles W. Oertli (Sue), Mrs. Robert H. Kittner (Mim).

At right: Co-chairmen Mim Kittner (left) and Sue Oertli enjoy the party.

1990 Members' Days

January 31	Lecture: "Plants of the Future" from White Flower Farm
February 13	Lecture/Film: "Tropical Rain Forests of Costa Rica"
March 3	Gardening Lecture with Chip Tynan of the Answer Service
April 11	Arboretum Walk—Jonquils & Wildflowers
May 18	Purple Martin Evening
June 21	Japanese Garden Guided Tour
July 6	Members' Musical Evening
August 11	Early Morning Stroll
September 13	Lecture/Film: Madagascar
October 21	Cider Walk—Barbershop Quartet
November 9	Lecture/To Be Announced
December 8	St. Louis Children's Choir Chamber Singers & Celebrity Reading

Members' Board Officers Elected

At its November meeting the Garden's Members' Board elected new officers for the 1990-1991 term. Elected were: Sue (Mrs. Rudyard K.) Rapp, president; Mary (Mrs. Antonio I.) Longrais, first vice president; Mary Randolph (Mrs. Walter F.) Ballinger, second vice president; June (Mrs. Fred S.) Kummer, secretary; and Mr. Donnell Reid, treasurer.

CASTLES & GARDENS OF IRELAND

May 19–June 2, 1990

Join Dr. and Mrs. Raven on a delightful tour of Ireland's most beautiful public and private castles and gardens. The reservation deadline is February 1, 1990. Watch your mail for tour details, or call Brenda Banjak, membership coordinator, at 577-9517.

RESEARCH ASSOCIATE

Alan Templeton

Genetics, Speciation and Conservation

Alan Templeton is a professor of biology and genetics at Washington University, where he is head of the Evolutionary and Population Biology Program. Dr. Templeton received his Ph.D. in Human Genetics from the University of Michigan in 1972. He has been at Washington University since 1977, and he has been a research associate of the Garden since 1986.

My research interests fall into three primary areas: ecological genetics, speciation, and conservation biology. Ecological genetics deals with the adaptive significance of genetic variation in natural populations. Although most of my work focuses on animals, the adaptive significance is frequently mediated through plant-animal interactions. For example, we are studying the adaptive significance of genes in flies from the genus *Drosophila* that determine how long the flies remain as larvae in rotting pads of prickly pear cactus. A more applied example of ecological genetics is my participation in an international collaborative study to identify specific genes that predispose people to coronary heart disease.

My second major interest is branching speciation, the process by which new species are split off from an ancestral species. Most previous work on the origin of species reflects a strong dichotomy between zoologists and botanists, who usually cannot even agree on a common definition of species. In contrast, I try to uncover the principles of speciation that are common to both plants and animals. The predictions generated by these theoretical studies are tested by laboratory experimentation and by using DNA sequences to reconstruct the evolutionary histories of groups of species to see if certain predicted patterns can be found.

My final major interest is conservation biology. I have worked closely with people at the St. Louis Zoo in designing and implementing breeding programs for captive populations of endangered animal species. More recently, I have worked with the Center for Plant Conservation in applying the lessons learned from animal populations to the problem of breeding *ex situ* populations of endangered plant species.

I also work with natural populations of animals found in the Ozarks, primarily in the dry glade habitats where bedrock lies close beneath the surface soil. (See "Genetics and Evolution", *Bulletin*, March/April 1989, page 10.) The results of these studies have been used to devise schemes for preserving endangered species in natural habitats. We are testing the utility of these schemes by reestablishing populations of collared lizards in glades from which the lizards had previously gone extinct. The lessons we learn can be used in designing reintroduction programs for endangered plants and animals in general. ■

LIBRARY NEWS

Ewans Celebrate Birthdays

Joe and Nesta Ewan

Congratulations are in order for the Garden's newest octogenarian, Prof. Joseph Ewan, who turned 80 on October 24. Nesta Ewan, Prof. Ewan's wife, celebrated her 81st birthday on November 8.

The Ewans have been valued colleagues of the Garden since 1986, when the Library purchased their unequaled collection of 5,000 volumes on the history of natural history, biography, systematics, and exploration. The Ewan Collection is housed in the Museum building, Henry Shaw's original library and herbarium. There the Ewans continue their research and writing. They are the authors of more than 350 books and articles.

Prof. Ewan is the recipient of numerous awards. Most recently, a session was held in his honor at the annual meeting of the History of Science Society at the University of Florida in Gainesville, October 26–29.

Prof. Emanuel Rudolf wrote recently, "Joe and Nesta are scholars in the true sense of the word because they are constant seekers after knowledge that they generously share." Certainly this is true at the Garden, where staff, students and botanists benefit from the Ewans' friendship and counsel.

Dissertations— A New Collection

The Garden library, often praised for its special collections of rare and beautifully illustrated books, has another special collection that is important for its usefullness to researchers. The collection consists of dissertations in systematic botany, and it makes important primary research results readily available to the scientists who use the library.

These dissertations are unpublished monographs and floras written by students as part of their studies for advanced degrees, most often a doctorate. The Garden acquires all dissertations of interest that are available from University Microfilms International (which includes most United States Ph.D.-granting universities) and the National Library of Canada (for Canadian institutions).

The Library has purchased 575 dissertations since 1986. The collection will be kept up-to-date through the purchase of new dissertations as they become available. Our appreciation goes to Mr. and Mrs. Adam Aronson for their generous support of the dissertations program.

Left to right: Irv Logan, Alwyn Gentry, J. Marshall Magner, Albert Pallmann, Dennis Riggs.

World Food Day Teleconference

A panel of local experts, including Garden curator Dr. Alwyn H. Gentry, participated in a live teleconference on World Food Day, October 16, 1989. The local group held a panel discussion in the Japanese Garden, moderated by Channel 2's Dennis Riggs.

The segment was broadcast on the HigherEducation Channel (HEC) in St. Louis City on Cable Channel 1 through the Cooperating School Districts of St. Louis County, and at Webster University. It was produced by Webster University in cooperation with HEC and Cencom Cable.

World Food Day is sponsored by the Food and Agriculture Organization of the United Nations, and is observed worldwide. The teleconference began with an hour-long live panel discussion from Washington D.C. Participants included Senator Albert Gore and moderator Judy Woodruff. The local segment came next, followed by questions and answers by telephone to Washington.

The local panelists discussed deforestation, land and water degradation, pesticide contamination, and atmospheric climate change. Panelists were Dr. Gentry; Irv Logan of the Missouri Department of Conservation; J. Marshall Magner, formerly senior entomologist with Monsanto and an MBG Master Gardener; and Dr. Albert Pallmann, professor of meteorology at St. Louis University.

Dr. Gentry, an expert on the tropical rain forest, emphasized the critical effect of deforestation on dwindling worldwide food resources. The panel suggested courses of action needed to avoid a global catastrophe.

The program was videotaped and is available from the Stupp Teacher Resource Center at the Garden.

From the Garden Gate Shop

Orchid Sale

The Plant Shop will offer a spectacular array of orchids at a 20 percent discount to Members during the 1990 Orchid Show. The Sale opens on Friday, January 26, 9 a.m. to 7:30 p.m., and will continue to February 28, 9 a.m. to 5 p.m.

During the Orchid Show the Shop will feature *The World Wildlife Fund Book of Orchids*, published by Abbeville Press, $65. The book includes 212 stunning full color photographs, plus legends, history, botany and cultivation of orchids. A portion of the proceeds go to the World Wildlife Fund.

Inventory Closing and Clearance Sale

The Garden Gate Shop will be closed for inventory Wednesday and Thursday, January 3 and 4, 1990. The Shop will reopen on Friday, January 5, from 9 a.m. to 5 p.m., with 20 percent savings for members. The Clearance Sale will continue on Saturday, January 6.

Grants Support Exploration and Research

Plant exploration and research at the Missouri Botanical Garden has been furthered through generous grants from the National Science Foundation and the National Geographic Society.

The Garden has long been involved in exploring and studying various regions of the world to document the plant life growing there. Garden researchers have received funding in recent months for plant inventories in Costa Rica, Colombia, Paraguay, and Panama. The Garden is also involved in the translation, revision, and computerization of the massive Flora of China, funded in part by the National Science Foundation.

Studies of individual plant families and genera have been funded as well. A National Science Foundation grant was awarded to Dr. Peter H. Raven, director of the Garden, and Dr. Peter Hoch, associate curator, for their study of the Onagraceae, or evening primrose, plant family. Dr. Peter Goldblatt, B. A. Krukoff Curator for African Botany, was awarded a grant to study portions of the Iridaceae plant family in Africa, and Dr. Thomas Croat, curator, received support for his taxonomic revision of the *Rhodospatha* genus of the Araceae family.

We are grateful for the generous support from these foundations, which makes the Garden's worldwide research program possible.

Book Review

New Book on the Garden

A Gift To Glory In: The Missouri Botanical Garden (1859–1959), by Father William Barnaby Faherty, S.J., has been published by Harris-Friedrich of Long Beach, Washington, and is available in the Garden Gate Shop. Father Faherty, director of the St. Stanislaus Jesuit Historical Museum in Florissant, Missouri, is also the author of *Henry Shaw: His Life and Legacies*.

A Gift to Glory In, a 250-page book with 75 black & white photographs, tells the history of the Garden from its opening to 1959. "This is a scholarly review of the history of the Garden over the past century by a highly respected member of the St. Louis historical community," said Dr. Peter H. Raven, the Garden's director. "It is the best account we have to date of the years since the Board of Trustees assumed responsibility for the Garden."

HENRY SHAW ACADEMY

The Henry Shaw Academy at the Missouri Botanical Garden offers students aged 7 to 18 opportunities to deepen their understanding and appreciation of the natural world. The Academy strives to offer science motivated students classes that are not available in their schools, to supplement the learning that is taking place there.

KING SCHOENFELD

Summer Science Camp, 1989: "Hands-on" experiences offer students opportunities to deepen their understanding and appreciation of the natural world.

After School Programs: "Tuesday Topics"

This past fall the Academy added new after school classes in addition to its Saturday activities. Meeting from 3:30 to 5:30 p.m. on Tuesdays, the courses included "The World Through a Microscope" and "Tropical Rain Forest Discoveries." Students demonstrated a high level of learning with the help of the Garden's specialized staff.

This winter's after school programs are geared for ages 9 to 13. Classes feature "hands-on" projects leading to understanding complex concepts, such as acid rain and global warming. Openings are available for after school and Saturday classes this winter. Call 577-5135 for more information.

VOLUNTEER PROFILE

Garden Alumna Led Conservation Effort

The Garden's Library received a gift copy of *Nature's Seasonal Splendor: Native Plants and Wildflowers* by Fanny-Fern Davis, who graduated from Washington University in 1926 with B.S., M.A. and Ph.D. degrees in botany. Dr. Davis, who studied at the Garden with Dr. Benjamin M. Duggar and worked in the herbarium with Dr. Jesse M. Greenman, died October 3, 1989.

After retiring from the George Mason College of the University of Virginia, Dr. Davis moved with her husband Everett to Ft. Walton Beach, Florida, where she helped to establish a biology department at the new Okaloosa Walton Junior College. She became concerned with saving the rich variety of native plant species threatened by local development, and organized a group of enthusiastic volunteers to gather specimens through the Valparaiso Garden Club. The group started an herbarium, and eventually the project was expanded state-wide through the Florida Federation of Garden Clubs.

"Eventually I had fifty-five knowledgeable people all over the state sending me information, which I have carefully filed," Dr. Davis wrote just before her death. "There were very few trained botanists, but rather enthusiastic folks who took it on as a hobby . . . Each of them acted as a spark to ignite more interest. As a result, we have public-minded citizens all over the state finding . . . learning . . . and saving more of our native plants."

Dr. Davis's work will be of benefit to the Garden's research program, and is an inspiration to conservationists.

Raven Receives John D. Levy Award

Dr. Peter H. Raven has received the John D. Levy Human Relations Award from the St. Louis chapter of the American Jewish Committee's Institute for Human Relations. The award was presented by Henry Dubinsky, a member of the Committee's national board of governors, at a dinner at the Hyatt-Regency Hotel at Union Station on October 25.

Raven was honored for "developing mutual understanding of America's rich, pluralistic society." Raven said, "It is imperative that each and every citizen of the world try as hard as he can to understand one another in a dignified collaborative spirit, so that somehow, this single planet that we have functions in a way that will support ourselves, our children and our grandchildren in a reasonable sustainable manner."

The American Jewish Committee was founded in 1906. It is one of the nation's leading human relations organizations.

PGMS Honors the Garden

The Professional Grounds management Society (PGMS) presented its prestigious President's Award to the Garden and its director, Peter H. Raven, at the Green Team Conference and Trade Show held in St. Louis on November 12. The award for horticultural excellence was accepted by Robert Bowden, the Garden's director of horticulture.

IN MEMORIAM

William J. Hedley

William J. Hedley, a supporter and friend of the Garden since 1977 died in September of last year. The Garden is saddened by the loss of Mr. Hedley, who was an active participant in a broad array of community organizations including civic service as the mayor of Clayton for two terms. Mr. Hedley was trained in civil engineering at Washington University, and worked throughout the area as a consultant in that field.

He joined his wife, Katherine Henby Hedley, in her love of gardening as well as with her activities in the National Council of State Gardening Clubs. Mr. and Mrs. Hedley were Henry Shaw Associates for many years and participated in Garden causes including the capital campaigns. Mrs. Hedley passed away in January 1988. They are survived by their son Dr. William Henby Hedley of Dayton, Ohio.

Raven Chosen Honorary Vice Chair of International Meeting

Dr. Peter H. Raven, director of the Garden, has been selected to serve with a distinguished group of leaders in science, business, and politics as an honorary vice chair of the 27th International Geographical Congress to be held in Washington, D.C., August 9–14, 1992.

President George Bush will serve as honorary chair of the quadrennial meeting.

Other vice chairs include Dr. James Billington, librarian of Congress; Dr. Erich Bloch, director of the National Science Foundation; Senator Bill Bradley of New Jersey; Barber B. Conable, president of the World Bank; Kenneth W. Dam, vice president for law and external relations, IBM Corporation; Dr. Thomas W. Merrick, president of the Population Reference Bureau; Dr. Frank Press, president of the National Academy of Sciences; and Dr. Dallas Peck, director of the U.S. Geological Survey.

The first International Geographical Congress (IGC) was held in 1871. The IGC brings together leading geographers and related scientists and humanists from around the world to disseminate geographical knowledge and set a research agenda for the next four years and beyond.

Polish Botanist Visits Garden

Dr. Jerzy T. Puchalski, director of the Botanical Garden of the Polish Academy of Sciences in Warsaw, visited the Garden on October 16, 1989. Dr. Puchalski, who is interested in the problems and genetic effects of long-term seed storage, discussed research results with Garden botanists. He received tours of the Garden and its herbarium, and presentations of the TROPICOS database and the Center for Plant Conservation.

Planned Giving

Planned Gifts to the Garden

The Heritage Society, formed to recognize Garden friends who have made a planned gift, has grown significantly with nearly 100 members by year-end.

The most familiar of these special contributions, or planned gifts, is a bequest. The majority of gifts made by Heritage Society members has been through a bequest or a testamentary gift through the donor's will. In addition to bequests, other gifts of future interest are made such as naming the Garden as a beneficiary of a life insurance policy, a pension plan, or a charitable remainder trust.

Planned gifts can take effect immediately or at a future date as in the case of a bequest. The single important factor in all types of special planned contributions is the deliberation and careful attention to the financial goals of the donor. The method of making the gift is determined by the donor and is selected because it offers a special benefit that is particularly suited to that person's circumstances. Typically, the benefit received is a tax deduction that reduces income tax, gift tax or estate tax that the donor would otherwise incur. By making the planned gift, the donor is able to achieve his or her charitable intentions at a reduced cost.

The Garden extends its deepest appreciation to the members of the Heritage Society for their thoughtful support.

Recycled Paper In Use by the Garden

As part of its policy of environmental responsibility, the Garden is using recycled papers in its printed pieces whenever possible. A number of recycled paper stocks are available through the Garden's local suppliers, and these papers are competitive in cost and appearance to conventional papers.

Availability continues to be a problem, as many of these papers must be ordered well in advance, but it is hoped that as demand increases, so will supply.

The Garden discontinued use of styrofoam cups and containers in the Gardenview Restaurant last year. (See the *Bulletin*, May–June 1989.)

Moving? Please Remember To Send Us Your New Address.

To avoid missing any of your membership mailings, you *must* give us your new address at least three weeks *before* you move. Please enclose the mailing label on the back cover of this *Bulletin*, and mail to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

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KING SCHOENFELD

Left to right: David Vitoff, 2nd place, color; Mary Arunski, 2nd place, black & white; Ronn Nadeau, 1st place, black & white; Diana Madrid, 3rd place, color; and judges Carol Kane, Martha Frentrop, Jim Cuidon, and Jack Jennings. Not pictured: Pam Giles, 1st place, color.

Japanese Festival Photo Contest Winners

The first in a planned series of annual photography contests was held during this past summer at the Garden's 15th Annual Japanese Festival. Co-sponsored by National Super Markets, Inc., the contest invited entries in both black and white and color.

Winners were announced at a reception in October at the Ridgway Center. They received prizes of a camera, film, and gift certificates from the Garden Gate Shop and Robata of Japan. Judges were members of the St. Louis Camera Club, and included Jack Jennings, the photographer for the Garden's annual calendar.

The Garden extends congratulations to the winners, and warmest appreciation to all participants.

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COMING IN MARCH

CLIMATRON REOPENS!

Watch for all the exciting details.

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
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On the cover: Watch for dogwoods in bloom in the English Woodland Garden this spring. *—Photo by Patrick Watson*

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Comment

Climatron Complex Opens a New Era

Garden members and visitors can anticipate a new experience this spring. The renovated Climatron, the newly constructed Brookings Interpretive Center on the Tropics and the Shoenberg Temperate House will open to the public on March 30.

These new and renovated facilities serve as instructional tools that demonstrate the beauty and value of plant life in tropical and temperate climates, and illustrate how the loss of vegetation in these regions affects us. It is especially appropriate that the opening of our new facilities coincides with the global imperative to gain a better understanding of our environment and the role we all must assume in protecting it for our future and the future of our children.

The Trustees and staff are grateful to the thousands of individuals, corporations and foundations who recognized the importance of our capital fund drive and donated so generously, making it possible to renovate the Climatron and build the Interpretive Center and Temperate House. We extend special thanks to Mrs. Hermann F. Spoehrer, whose extraordinary support of the Climatron has allowed us to move forward on schedule; relatives of Robert Somers Brookings, the innovative St. Louis philanthropist, who have donated generously to the Brookings Interpretive Center on the Tropics; and most recently to the Shoenberg Foundation, whose exceptional support will be recognized by the naming of the conservatory displaying plants from temperate climates as the Shoenberg Temperate House (See page 3).

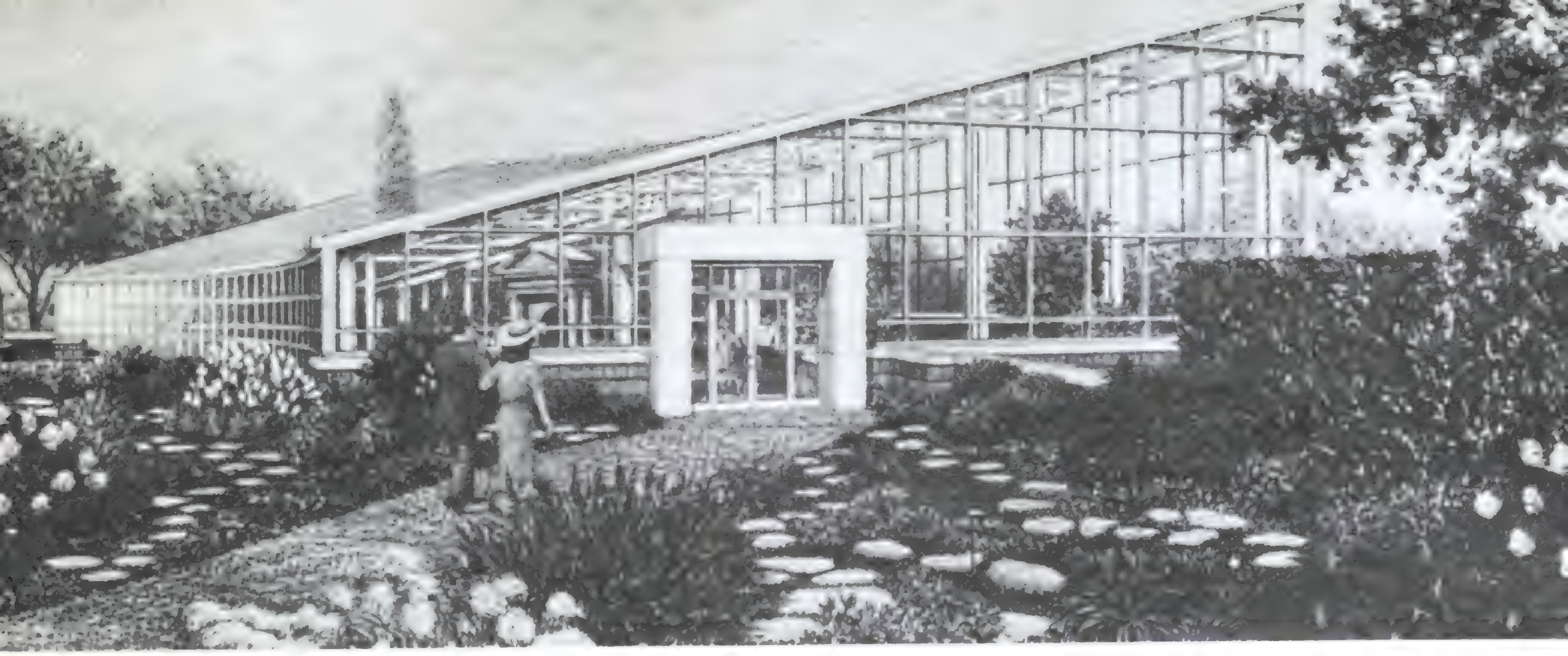
Plans have been underway Gardenwide for the opening of these facilities for the last two years and we have anticipated an accelerated interest in and demand for more education programs focusing on critical environmental issues. Without the property tax increase requested by the Garden last year, it will be especially difficult to respond to these demands. Unfortunately not all requests for education classes and programs can be fulfilled because the Garden does not have enough staff to handle the demand.

As a Member you can help during this period when finances are limited for any program expansion or growth by supporting the Garden in every way possible through your donations and as a volunteer.

Please join us for the opening of the Climatron, the Brookings Interpretive Center, and the Shoenberg Temperate House as a way of demonstrating your commitment to the Garden and its programs.

Peter H. Raven

HONORARY TRUSTEES: The Garden's two new Honorary Trustees attended the meeting of the Board on Wednesday, January 24, 1990. Shown with Board president Robert Kresko, left, and Dr. Peter Raven, right, are Prof. Phillipe Morat and Dr. Mildred Mathias.



SHOENBERG FAMILY NAMES NEW TEMPERATE HOUSE

On March 30, 1990, the Garden will dedicate the new Shoenberg Temperate House as part of the public opening of the Climatron complex. The Shoenberg Temperate House, a magnificent new display facility under construction for almost two years, replaces the 1913 Mediterranean House on the north side of the Climatron.

The Shoenberg Family continues a commitment to the Garden of more than two decades.

Robert E. Kresko, President of the Board of Trustees, noted that this latest gift of the Shoenberg family continues a commitment of more than two decades to the support of Garden improvements and programs: "The Shoenberg Foundation has generously supported some very wonderful additions over the years—the Ridgway Center's Shoenberg Auditorium; the Shoenberg Fountain; the Shoenberg Conservation Center serving the Garden's research library; and now the Shoenberg Temperate House. The recently installed bust of Linnaeus near the John S. Lehmann Building was given

continued on next page

Above: The Shoenberg Fountain, installed 1975.

Left: Bust of Linnaeus, installed 1989.

Below: The Shoenberg Conservation Center in the Garden library, named in 1986.

MISSOURI BOTANICAL GARDEN ARCHIVES

THE 1989 HENRY SHAW DINNER

A Special Celebration

In honor of the Centennial of the Board of Trustees, the Garden held its annual Henry Shaw Dinner at the Adam's Mark Hotel on January 23, 1990. The Henry Shaw Medal was presented to the past presidents of the Board and former directors of the Garden described below, in recognition of their distinguished service and dynamic leadership. The Henry Shaw Medal has been awarded intermittently since 1893. It honors those who have made a significant contribution to the Missouri Botanical Garden, botanical research, horticulture, conservation, or the museum community.

JOSEPH H. BASCOM

President, Board of Trustees
1973-1975

Elected to the Board in 1971, Mr. Bascom has served with distinction as a Garden Trustee for 18 years. During his tenure as president the Trustees began to implement the 1972 Master Plan, planning the major developments of the next decade, including the English Woodland Garden and the Japanese Garden. Mr. Bascom is the retired chairman of the board of Broderick and Bascom Rope Company. He has been an Emeritus Trustee of the Garden since January 1989.

JOHN H. BIGGS

President, Board of Trustees
1984-1989

Mr. Biggs presided over the Board during a period of unparalleled activity at the Garden. Challenges included planning for expenditure of the property tax support approved by voters in 1983 and organizing the current $18 million capital campaign. A native St. Louisan, Mr. Biggs was president of Centerre Trust Company (1985-88) and vice chancellor for administration and finance at Washington University (1977-85). He is currently based in New York as president of TIAA/CREF, the largest pension system in the United States. He joined the Board in 1983 and was elected an Emeritus Trustee in 1989.

DAVID M. GATES

Director of the Garden
1965-1971

Dr. Gates, a native of Manhattan, Kansas, earned his B.S., M.S., and Ph.D. degrees in physics from the University of Michigan. An internationally known physicist and authority on plant ecology, Dr. Gates was the first person to record the infrared spectrum of the sun. He came to the Garden from the University of Colorado, where he was a professor of natural history. As director, Dr. Gates improved maintenance and management at the Garden, worked to develop the graduate program, and supervised the planning of the John S. Lehmann Building. In 1971 he accepted his current position as professor of biology at the University of Michigan, Ann Arbor, and director of the University of Michigan Biological Station.

HENRY HITCHCOCK

President, Board of Trustees
1962-1967

Henry Hitchcock represents the third generation of a distinguished St. Louis family to serve on the Garden's Board. Preceded by his grandfather Henry, a member of the original Board, and his

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SHOENBERG TEMPERATE HOUSE continued

KING SCHOENFELD

Shoenberg Auditorium in the Ridgway Center, 1982.

in memory of Mrs. Sydney M. Shoenberg, Jr., by her husband, family and friends. These gifts have dramatically enhanced the Garden's beauty and its abilities to serve the public, and we are deeply grateful to our fellow Trustee Sydney Shoenberg, Jr., to Mrs. John Shoenberg, and to Mr. and Mrs. Robert Shoenberg for their continuing involvement and generosity."

Dr. Peter Raven added, "The Shoenberg Temperate House, in addition to being a quite beautiful addition to the grounds, roughly doubles our display space for temperate plants from around the world that are not hardy in St. Louis. This is a very important part of the Garden's overall display effort, as we use and see temperate plants on a daily basis. I am delighted that this building can be dedicated to a family that has played a major role in making the Garden an internationally renowned institution."

The Shoenberg Temperate House was designed by The Christner Partnership, Inc., of St. Louis, with interior displays by Environmental Planning & Design of Pittsburgh, Pennsylvania.

UPDATE: *As of December 31, 1989 the capital campaign had raised $17,679,359 in gifts and pledges.* ■

RICHARD BENKOF

Honorees attending the dinner were (left to right): Hal Wuertenbaecher, C.C. Johnson Spink, John Biggs, Tom K. Smith, David Gates, and Joseph Bascom.

father George, Mr. Hitchcock became a Trustee in 1947. He was president of the Board from 1962 to 1967, and served as acting director from 1963 to 1965. During these years the Trustees devised a Master Plan calling for the construction of the new research facility (now the John S. Lehmann Building); expanded the members' organization; and established the library's rare book restoration department. Mr. Hitchcock became an Emeritus Trustee in 1974.

TOM K. SMITH JR.
President, Board of Trustees
1975-1981

Mr. Smith joined the Board in 1963 and was elected president in 1975. His tenure as president was marked by extraordinary growth and development at the Garden. Implementing the Master Plan, the Trustees opened the English Woodland Garden in 1976 and the Japanese Garden in 1977, and began construction of the Ridgway Center. Under Mr. Smith's leadership the Garden began to realize its long range goal of utilizing its scientific and educational resources for the benefit of the community. Mr. Smith retired as an officer of the Monsanto Company in 1979. He became an Emeritus Trustee in 1988.

ROBERT BROOKINGS SMITH
President, Board of Trustees
1958-1962

Mr. Smith, who joined the Board in 1952, was previously honored with the Henry Shaw Medal in 1984 for his achievements at the Garden during his presidency. Mr. Smith's leadership made possible the development of the Climatron. He also was responsible, in large part, for the opening of the All-America Rose Test Garden; the restoration of Tower Grove House; and the advancement of the Garden's research program. Mr. Smith retired from the Mercantile Trust Company as a vice-president. He was elected an Emeritus Trustee in 1981.

C. C. JOHNSON SPINK
President, Board of Trustees
1981-1984

Mr. Spink, who joined the Board in 1974, presided over the Garden during a critical phase in its development. A three-year capital fund drive achieved its $12 million goal; the Ridgway Center opened in 1982; and in 1983 the people of St. Louis voted to create the Botanical Garden Subdistrict, providing property tax support. This successful campaign, one of the most significant developments in the Garden's history, has made possible the Garden's continued progress. Mr. Spink is the former chairman of the board and chief executive officer of *The Sporting News*.

FRITS W. WENT
Director of the Garden
1958-1963

Dr. Went came to the Garden in 1958 with a distinguished background in plant physiology and ecology. Born in the Netherlands in 1903, he received his doctorate from the University of Utrecht in 1927. He was a professor of plant physiology at the California Institute of Technology from 1933 to 1958, where he developed the Phytotron, an unprecedented environmentally controlled research facility for growing plants. Dr. Went's vision helped conceive, plan and build the Climatron at the Garden. After leaving the Garden in 1963, he spent over 20 years studying desert ecology at the Desert Research Institute of the University of Nevada. Throughout his career he has continued to make distinguished scientific contributions in the areas of plant growth and desert plant ecology.

HARRY E. WUERTENBAECHER, JR.
President, Board of Trustees
1967-1970

Mr. Wuertenbaecher has served on the Garden's Board since 1963. During his presidency the Trustees carried out the Garden's first capital fund drive, raising $3 million for the construction of the new building to house the education and research facilities (the John S. Lehmann Building). Mr. Wuertenbaecher began his service to the Garden on the Members' Board and has provided leadership on the Board of Trustees for 26 years. He is vice president for public relations at Union Electric Company. He was elected Emeritus Trustee in 1987.

RICHARD BENKOF

Henry Shaw, as portrayed by actor Joneal Joplin, narrated a slide presentation on the past 100 years at the Garden.

Above, left to right: Robert Hyland, Peter H. Raven and Tamra Raven.

Right: Mayor Vincent C. Schoemehl, Jr.

RAVEN IS HONORED AS

DR. PETER H. RAVEN, director of the Garden, was honored as the 1989 St. Louis Man of the Year at a ceremony at the Ridgway Center January 26, 1990. Dr. Raven is the 36th community leader to be honored since the award was established. He was chosen by a panel of 19 past honorees. Robert Hyland, 1988 Man of the Year, presented the award.

St. Louis Man of the Year is sponsored by the *St. Louis Post-Dispatch*. The award was established by the *St. Louis Globe-Democrat* in 1955 to honor men who have made outstanding contributions of leadership, time and talent to the St. Louis community. Raven was recognized for his brilliant work as a scientist, as a leader of the world-wide environmental movement, and as the tireless administrator who has made the Garden one of the world's premier botanical institutions and one of St. Louis' major attractions.

Accepting the award, Dr. Raven said:

"I want to sound a warning about the present and future and relate to you my own deep personal concerns about the way we treat ourselves and others, and our environment.

"I want to speak out as a resident of St. Louis and ask for you to join in an effort to understand how we can help our city and our state become even better and more satisfying places to live and raise a family....

"As a society, we are in trouble... Our public schools are a mess. Our roads and bridges are falling apart. We are awash in garbage and pollution. Millions of the poor, most particularly children, are deprived of even rudimentary health care. We are perplexed by the growing number of homeless and mentally ill....

"I feel especially concerned and frustrated by the shortsighted and thoughtless degradation of our biological inheritance—the environment that makes life on earth possible, and the permanent loss of so many of the plants and animals that share this world with us....

"Who knows what foods, medicines, or other commercial materials we are losing? Who knows whether a plant somewhere in the Amazon holds the key to curing AIDS? Or one of the cancers?...

"The ecosystems in which these plants and animals occur hold the key to the steady, sustainable use of their native lands. How many of them can we afford to lose and still hope to understand how to stabilize, and then improve, the lot of the human race? Where will we find our sources of beauty and wonder when they are gone?...

"The destruction is steady, time is short, and only a very few trained scientists are available to identify and record these species....

Above: Dr. Raven and Mrs. Raven are applauded by former honorees attending the ceremony.

Left: Dr. and Mrs. Raven in front of the Climatron display complex, which highlights the Garden's commitment to research in tropical botany and global environmental concerns.

MAN OF THE YEAR

''Americans . . . have more to gain and more to lose than any other country from the global instability that arises from our lack of concern . . . .

''This . . . also has an impact on the way we treat others. We . . . squander those very resources—our men and women—that historically have fueled our growth.

''Denying anyone—man or woman, black, white, or brown—an opportunity to contribute to society represents a loss of human potential at a time when we need all the help that the human mind can give us. Taking action is no longer simply a matter of ethics, or morality, but one of shared necessity . . . .

''The path that we have taken requires cooperation between nations, based on mutual respect and attention to the elements that sustain our natural environment.''

''We make it hard on women in terms of employment and status, and we do a poor job in human and race relations . . . .

''It is discouraging to note that we still have a long way to go in our response to the continuing patterns of racial discrimination that do so much harm to every member of our society . . . .

''Providing women and minorities with fair and adequate means to pursue their own development is no more than just, and is no less than common sense.

''We must accept the obligation of understanding and protecting our precious natural resources—the sustainable productivity of our planetary home—so that human life may continue to flourish and produce the very best of which it is capable far into the future . . . .

''To this task all of us here at the . . . Garden, and I personally, pledge to contribute the very best of which we are capable.''

—Edited for publication in the Bulletin.

H·O·M·E GARDENING

Starting a Vegetable Garden

A close friend of mine who just happens to be one of those spirited and diligent vegetable gardeners recently moved away. He had invested years of hard work and patience in his vegetable garden, and had finally been rewarded with a rich, productive plot of ground. From his mournful look when he drove off, I got the impression that he was leaving part of the family gold behind.

If you are considering investing your time in a vegetable garden this year, it's time to begin with the preparation. It is hard work in the beginning, but it does get easier.

PLANNING

When establishing a vegetable garden, you must first decide where to put it. Compromises may be necessary. As a general rule the garden needs at least seven hours of full sunlight to produce a good crop. Root crops and leafy crops can get by with fewer hours of sun, especially in their juvenile stages. However, vegetables with fruit should be positioned to receive as much sunlight as possible. South facing slopes are ideal for vegetable gardens, as they have a better chance of good drainage and a flatter exposure to full sunlight. South slopes also are quick to warm up in the spring and provide a longer exposure to sunlight in the fall.

Avoid areas where large trees produce morning to midday shade. This is the cooler time of day in the summer, when the plants develop rapidly. During the afternoons, heat and moisture stress slow growth activity and reduce the rate of fruit development.

Locate your garden close to a good and dependable source of water. Also consider installing an in-ground irrigation system to maximize water conservation and plant use.

SOIL IMPROVEMENTS

Soil preparation is equal to location in determining your garden's success. This is where you invest patience and sweat. Though most gardeners realize this, often we fall short of the commitment required and end up with a less productive garden. If your time is limited, choose to make a smaller garden with room to expand. Invest your efforts wisely, and they will pay off next season and in the coming years.

Good garden soil has moderate to fast drainage, a high organic content, a crumbly texture that is open and loose, a balanced soil pH, and a supply of macro-and micronutrients. Generally, all of this cannot be achieved in one season, especially in soils with a high clay content like those in the St. Louis area.

The key factor is the building of soil ''tilth''. Tilth is achieved when enough organic matter has been incorporated to give the soil a light, friable texture. Good tilth can only be built over a period of several years as compost, summer mulches, green manure and cover crops are repeatedly worked into the soil. The result is a rich mixture of organic materials in various stages of decomposition.

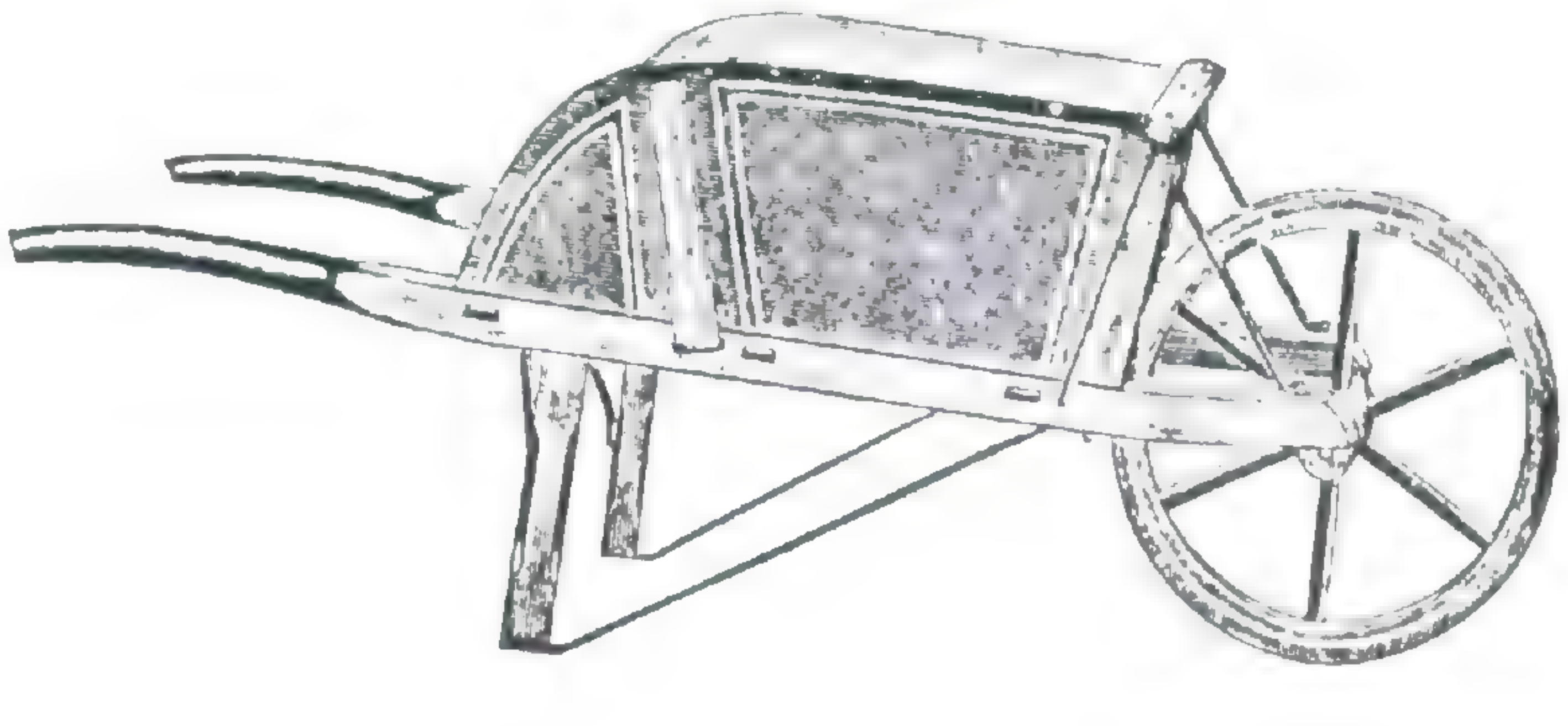
WORKING THE SOIL

If you have a clay soil, don't despair. Some of the most productive soils have a clay base. Any soil with about one-third clay will act like clay: slippery when wet and hard as a rock when dry. On the other hand, clay soils have a large capacity for nutrient and water storage and converting them to fertile loams simply requires some effort.

Begin working the soil when a soil ball will crumble easily when squeezed. If it is too dry and hard, water and wait a few days. Do not work clay soils when they are wet, as you may destroy some of the soil structure, an effect that could take several years to correct.

Faced with heavy clay soil, many people opt for a raised bed garden. With this method, a wooden frame is constructed on top of the ground and filled with prepared soil. This can be expensive but it is quick. Keep in mind that some subsoil digging should still be done to improve drainage.

If you opt for the extra work, you can create productive clay soil in an in-ground bed. Dig to a depth of 18 inches with a spade and incorporate a six-inch layer of composted organic matter into the lower foot of soil. This is a deep bed but it will be worth the effort in the long run to get good soil drainage and root penetration. Work the organic matter in well with a spade or potato fork.



SOIL TESTING

At this point, it is helpful to know the nutrient status of the soil so that the right amounts of fertilizer, specifically phosphate, potassium, magnesium and calcium, can be added to the subsoil layer.

You can estimate the fertilizer you need from a soil test performed by an independent or state soil testing laboratory. The Missouri Cooperative Extension Service can do this for you. A basic fee of ten dollars is required per soil sample. March is not too early to sample your soil as it might take several weeks to receive the report. A soil test will determine the current pH (degree of acidity). Good vegetable soils range in pH from 6.0 to 6.5. However, do not add lime to change the acid balance unless the soil test indicates that you should. Overliming limits the solubility and plant uptake of several essential elements for plant growth, including iron, phosphate, copper, zinc and manganese.

TOPSOIL AND FERTILIZER

The top six to nine inches of soil should be highly amended with composted organic matter. As you spade the soil, avoid tracking across the freshly turned areas. Topsoil is where drainage and root aeration are most critical. It also is where the soil moisture can fluctuate from soaked just after watering to baked after a day or two of 95 heat. It is important that the soil maintains a loose, crumbly structure that will absorb water and remain pliable enough for root penetration to moisture below the surface.

At this time, fertilizer should be incorporated in amounts specified according to the soil test report. Generally, for vegetable gardens about one to two pounds of 10-10-10 is sufficient. Spade it in with the organic matter and other specified amendments.

USING A TILLER

Some people, including myself, would prefer to use a tiller to do the soil work on bare ground. However, the first time you dig your garden the soil will probably be difficult to cultivate with a tiller. It may be compacted, and filled with rocks, tree roots or other obstacles that make tilling a tough job. The first time around, it would be best to stick to the spade. Once the soil has been dug, a tiller is all you need to incorporate organic material and fertilizers. If you still want to use one for groundbreaking, consider renting.

Gardeners managing areas larger than 500 square feet or soils of high clay content may benefit from buying a tiller. However, tillers without sufficient horsepower are a waste of money unless all you intend to do is surface incorporate in the spring and power weed in the summer.

GARDENING IN TURF AREAS

Establishing a garden in a turfgrass area is another possibility that presents both advantages and disadvantages. Placing gardens in turf areas typically reduces weed control efforts for at least the first year. If you pick an area where the turf grew well, there is a good chance that the soil qualities are desirable for a good vegetable garden.

The major disadvantage is that you have to eliminate the turfgrass. The most popular method involves treating the turf area with a specific turfgrass herbicide to kill the grass down to the root system. This leaves little chance for resprouting of weeds or grass. Alternatively, the turf can be sliced with an edger and removed in rolls or sections. However, you should be prepared to excavate about two more inches of soil to disrupt the root system. This approach should not be used for zoysia or bermuda grass unless you are prepared to excavate as much as eight inches deeper.

In the spring elimination of turfgrass by chemical application is not ideal, as the plants are in a state of dormancy and do not actively absorb the compound. In this case, one suggestion is to place a four-inch layer of oak leaf mulch over the garden area and cover it with a tarp or plastic sheeting. The oak leaves will leach tannic acid that will promote the burning of leaf tissue while the tarp causes the area to heat and break dormancy earlier. Lack of sunlight also causes etiolation and exhaustion of stored food reserves, making the plants weaker and more susceptible to temperature extremes. In about a month, remove the tarp. The turf should appear yellow and brown. At this point it can be tilled.

CONGRATULATIONS

After the heavy digging, all that is left to do is raking and leveling the bed, and it is ready for planting. Now for the fun part!

—Steven D. Cline, Ph.D.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Saturday, 9 a.m. to noon, at ***577-5143.***

March Tips

- Begin fertilizing houseplants when new growth appears.
- Peach and other stone fruit trees can be pruned now. Try forcing some of the prunings into bloom.
- Dormant, bare-root mail order stock should be unpackaged and planted immediately upon arrival. If weather conditions prevent proper planting, temporarily "heel-in" plants outdoors or store them in a cold, unheated site under cover. Remove shipping packages and wrap the roots in damp moss to prevent drying out.
- Apply crabgrass preventers between mid-March and mid-April.
- Cut back ornamental grasses.
- Mow liriope and durable ground covers such as ivy; raise mower cutting height to five inches.
- Apply weed killers for cool season, broad-leaf weeds.
- Don't remove mulch from roses until the end of the month.

April Tips

- Average last frost date in St. Louis is April 15.
- Start seeds of squashes, pumpkins, and melons indoors toward the end of the month.
- Set plants of broccoli, cabbage, and cauliflower outdoors.
- Sow seeds of beets, carrots, chard, lettuce, spinach, turnips, and radishes outdoors.
- Complete pruning before buds open.
- Fertilize perennials lightly as they begin to grow. Use a complete fertilizer that is low in nitrogen.
- Divide summer and fall blooming perennials now.
- Prune roses early in the month, and begin fertilizing and spraying programs.
- Prune summer-blooming shrubs.
- Fertilize azaleas after blooming is finished. Use a fertilizer that is formulated for acid-lovers.
- Deadhead bulbs after blooming is complete.
- Apply bulb-booster fertilizers now.
- Cut turf low and remove all clippings from the first mowing. The mower height should then be raised as the normal mowing schedule is resumed. Aerate and dethatch if indicated.
- Apply crabgrass preventer by mid-month.
- Zoysia lawns may be fertilized in late April. Limit actual nitrogen to no more than two pounds per 1000 square feet annually. Higher nitrogen application rates have been shown to accelerate thatch buildup.
- Spray peonies and clematis now if fungus was a problem in the past year.
- Remove old foliage from bearded iris plantings to help control iris borers.

—Chip Tynan, The Answer Service

INTERVIEW/A Conversation With Larry DeBuhr

New Director of Education

KELLY

Dr. Larry DeBuhr

EDITOR'S NOTE: Dr. Larry DeBuhr was appointed director of the Garden's education division effective January 1990 (see the Bulletin, January-February 1990). DeBuhr, his wife Astrid and their two children will be moving to St. Louis from Kansas City this spring. While completing a project for the National Science Foundation in Kansas City, DeBuhr has begun his work here in St. Louis. Recently he shared these thoughts on education at the Garden.

What do you hope to accomplish with the education division at the Garden?

The Garden has established a very fine science education program, with an excellent staff and good relationships with area schools. I'm looking forward to building on that base, expanding our current efforts.

One of the things that excites me about coming here is the opportunity to innovate, to try some new concepts in science education. We're going to do more testing of results, too, to make our programs even more responsive to the needs of students and teachers.

You have said that your most immediate goal is to expand our service to the community. How do you plan to do that?

Within the next six to eight months we plan to establish an Education Advisory Board here. I'd like to have participation by local science teachers, community leaders from all social and economic groups, representatives from the other cultural institutions in St. Louis, and some Garden members who are especially knowledgeable and interested in education. The Garden Guides have a lot of expertise, for example.

The goal of the Advisory Board will be to help us target and meet the community's education needs more effectively.

And long-term goals?

It is critical to get more kids interested in science and keep them interested. The future literally depends on our ability to train competent scientists, and I think everyone agrees that science education in this country needs improvement.

How do we get kids excited about science?

There are two ways: to improve the quality of teaching, and to start working with children when they are very young, five to seven years old. I call this "building the pyramid"—if we get more students interested in studying science as youngsters, more high school, college, and graduate level students will remain in scientific programs as they grow older. This will increase our pool of qualified scientists and teachers in the future.

Sounds as though it will increase family participation, too.

Absolutely! We're eager to broaden the base of St. Louisans who take advantage of the Garden, from all parts of the city and county. In working with young children, we will involve their parents as well.

You mentioned teacher training.

Improved teaching is the *key* to keeping students interested and learning. As more elementary teachers become comfortable with teaching science, their students will improve, too.

The Garden already provides some teacher training. We hope to expand that, and to continue to work directly with area school districts on collaborative projects. My work in Kansas City for the National Science Foundation has involved a project called the "Elementary Science Specialist Program" in which we work with teachers in a summer institute and fall internships to improve their basic knowledge of natural science, integrate that knowledge with effective teaching methods, and follow up to strengthen science programs in their own schools. It has been very effective, and I hope to be able to introduce something like that here.

What about the Magnet School project?

That is another big opportunity to reach a lot of students, and test some innovative curricula. We'll be cooperating with the Science Center, the Zoo, and the University of Missouri-St. Louis as we develop the Magnet School plans, and I'm sure that collaboration will increase.

How about older students and adults?

Those programs also will continue and expand, with the opening of the Center for Home Gardening. At the high school level, I'm especially eager to follow through with the ECO-ACT students and the Henry Shaw Academy. Those students already are highly motivated to continue with science, and we want to increase their numbers throughout the community.

Do you see any problems in achieving all this?

Well, certainly funding is the greatest challenge. Without a higher level of tax support we cannot increase staff, for instance. As it is, currently we must turn away 50 percent of the requests we get from schools and teachers, because we simply don't have the instructors to teach them.

What do you see as the Garden's most crucial goal in educating teachers and students?

We must help people understand *what science is*. Science is *not* a collection of isolated, confusing facts; science is the process we use to discover new information and the way we *use* that information to understand and explain the world around us. I think that's the most important concept we can give people. ■

Climatron Complex Will Be Focus for Educators and Students

CLIFF WILLIS

Donna MacBride of the Development Office and Dr. Raven (center) give teachers a guided tour of the Climatron.

The reopening of the Climatron display complex in March will provide St. Louis with an extraordinary educational resource. Students of all ages will have the opportunity to tour a living rain forest and a Mediterranean garden, and to learn about them from interpretive signs and exhibits.

The Garden's staff has developed a host of activities and materials to enrich this experience. St. Louis area educators have been invited to special previews to acquaint them with the new programs and materials that will be furnished to schools.

Educators' Tour

On January 17, 1990, 52 science teachers and curriculum specialists from public and private schools received a presentation by Dr. Raven and the Garden's education staff, including handouts of course lists, information sheets and curriculum materials. The presentation was followed by a tour of the Climatron display complex.

Teachers' Open House

On March 5, all St. Louis area science and art teachers are invited to an open house and reception. Guides will be present in the Climatron, and Larry DeBuhr, director of education, will give teachers an overview of ways to use the Garden's resources in their classrooms.

Adult Courses and Lectures

The Spring 1990 brochure mailed recently to all members gives full details on Climatron-related activities for adults. These include a series of curators' talks, a special guided tour, and a course on products derived from tropical plants.

Henry Shaw Academy

"Secrets of the Rain Forest" is a five-session course meeting on Tuesdays after school this spring. Academy members will study the ecology of the tropical ecosystem, then serve as "Climatron guides" on Earth Day, April 21. See the Spring 1990 brochure mailed recently to all Academy members and MoBots, or call 577-5135.

Poster Contest

Students from area schools, grades K-12, have been invited to participate in a poster contest in celebration of the Climatron complex reopening. Teachers received lesson plans to introduce topics on the tropical rain forest to their students, and to help the students develop their posters. Prizes will be awarded at the formal Climatron Grand Opening ceremony on March 30, 1990. Winning entries will be on display in the Ridgway Center. See the Calendar of Events on pages 12-13 for details.

Special Publications

A very special collaborative project coordinated by the Development Office with assistance from the Members' Board, the Education Division and the *St. Louis Post-Dispatch*, the Climatron Coloring Book will be available for the first time at the Members' Preview Weekend. See page 15 for details. Additional educational brochures on the tropics and the rain forest, specially developed by Garden staff, also will be available for children and adults on opening weekend.

Climatron Anecdotes Requested

In celebration of the grand reopening of the Climatron, the Garden is asking area residents to recount their favorite experiences inside the well-known St. Louis attraction.

"The Climatron has been a part of the St. Louis landscape for nearly 30 years, and millions have visited," said Teri Dresler, director of marketing. "We're looking forward to sorting through all those wonderful experiences, and reading about the Climatron's impact on not only the St. Louis community, but on visitors from around the world."

Anecdotes should be sent as soon as possible to: Climatron, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO, 63166-0299.

Missouri Botanical Garden

CALENDAR OF EVENTS

March-April 1990

MARCH & APRIL

WALKING TOURS
Now All Tours Begin at 1:00 p.m.

Join us every Tuesday, Saturday and Sunday at 1:00 p.m. for a tour led by Garden Guides. Come enjoy the spring blossoms and learn about architecture, history, sculpture and horticulture at the Garden. Meet at the Ridgway Center ticket counter. Free with regular Garden admission.

MARCH

5 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. Master Gardeners from the Garden and the Missouri Extension Service will be available for on-the-spot identification of plants and diagnosis of their disease and horticultural problems. Bring in your plants or cuttings for some expert advice! Free with regular Garden admission.

9 FRIDAY

Members' Preview: Spring Flower Show

5 to 8 p.m., Orthwein Floral Hall. Join us for the first glimpse of spring. Entertainment, cash bar. Garden Gate Shop will be open. Dinner buffet available in Gardenview Restaurant. For Members only; watch your mail for details.

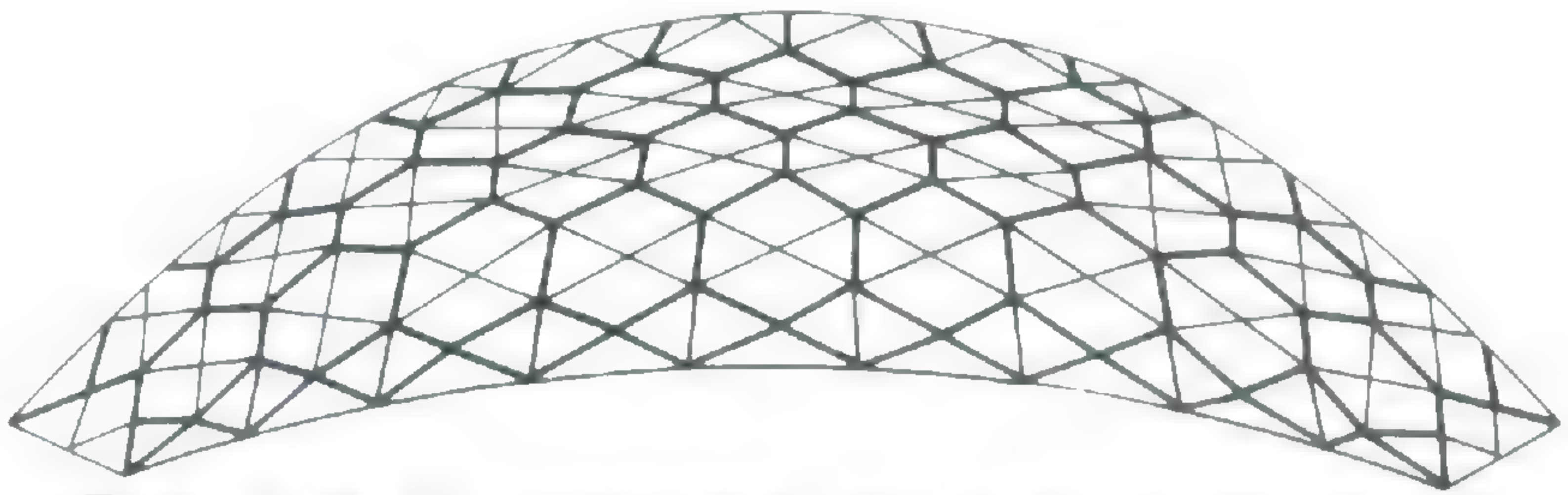
10 SATURDAY

Exhibit: "Photographs from *A World of Plants*"

9 a.m. to 5 p.m., Ridgway Center. Kiku Obata displays her magnificent photographs from *A World of Plants: The Missouri Botanical Garden*, recently published by Harry N. Abrams, Inc. Free with regular Garden admission.

MARCH 10-APRIL 8 / Spring Flower Show

9 a.m. to 5 p.m. daily, Orthwein Floral Hall. "A Woodland Retreat" features a rustic cabin in a landscape of streams and quiet pools, with a profusion of flowering trees, shrubs and wildflowers. Dogwoods, crabapples, forsythia, lilacs, azaleas, pansies, freesias, Dutch irises, snapdragons, lilies of the valley, Dutchman's breeches and more. Free with regular Garden admission. *Members' Preview—see March 9.*



CLIMATRON 1990
Missouri Botanical Garden

MARCH 30-APRIL 1
Climatron Grand Opening Weekend

11 a.m., Friday, March 30: formal dedication ceremony, followed by opening to the public. Throughout the weekend, 9 a.m. to 5 p.m., Garden Guides will be in the Climatron complex to answer questions; animals from the St. Louis Zoo will be displayed in the Climatron; a slide presentation on the renovation and a film on the tropical rain forest will be shown throughout the day in Shoenberg Auditorium. The Climatron Coloring Book for children, sponsored by the *St. Louis Post-Dispatch*, will be distributed free in Monsanto Hall. Winners of the Climatron Poster Contest from area schools will be on display in the Ridgway Center. The Climatron Grand Opening Weekend is co-sponsored by the *St. Louis Post-Dispatch*. Free with regular Garden admission. *Members' Preview Weekend—see March 24-25.*

11 SUNDAY

Sierra Club Lecture: "Last S
for Alaska's Tongass Forest

2 p.m., Shoenberg Auditorium
Susan Warner, Wildlife Biologis
the Southeast Alaska Conserv
Council will discuss the plight c
America's most threatened nat
forest. Free with regular Gard
admission.

15 THURSDAY

Gardening by Design Lectur
"Intensive Vegetable Gardening"

1 and 8 p.m., Shoenberg
Auditorium. Mark Kane, assoc
editor at *Fine Gardening* maga
will present techniques for get
the most from your garden. Fo
lecture in a series of six. Ticke
subscription only, $20 member
$25 non-members. Individual
tickets are available if series is
sold out, at the door one hour
before the lecture: $4 member
$5 non-members. Call 577-512
for information.

19 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Cente
See March 5 for details.

20 TUESDAY

Lecture: "Buttons: Plant Designs in Miniature"

1 and 7:30 p.m., Shoenberg
Auditorium. Ann Rudolph, arch
for the National Button Society,
present a slide lecture on butto
and their history. Free with reg
Garden admission.

2 THURSDAY

rdening by Design Lecture: andscaping With Container nts"

nd 8 p.m., Shoenberg ditorium. Lecture by Jim Wilson elevision's "Victory Garden". e March 15 for details.

3 FRIDAY

in Forest Safari Party

0 to 11:30 p.m., Climatron play complex. Reservations are ited; call 577-9500, or see itation mailed recently. $45 per rson, for members only. onsored by Famous-Barr. *back cover.*

4-25 SATURDAY-SUNDAY

matron Preview Weekend

.m. to 5 p.m., Climatron display nplex. A special preview for Gar- members only. *See back cover details.*

9 THURSDAY

rdening by Design Lecture: Practical Approach to sidential Landscape Design"

nd 8 p.m., Shoenberg ditorium. Dr. William R. Nelson, hor and professor of horticulture he University of Illinois, will re new approaches in dscaping. See March 15 for ails.

ee Wills Clinic

30 p.m., Garden Room, Ridgway nter. One of a series of informal minars offered as a service to embers by the Planned Giving ogram. Reservations are quired: call 577-9532. Free. e page 20.

0 FRIDAY

rmal Dedication Ceremony for e Climatron Complex

a.m., Climatron entrance. bbon-cutting ceremony, followed opening to the public. Regular arden admission. *See highlight.*

MARCH 3 / MEMBERS' DAY

Gardening Lecture With Chip Tynan

11 a.m. and 2 p.m., Shoenberg Auditorium. Chip Tynan of the Garden's Answer Service will discuss "Old Gardening Basics and New Gardening Techniques," with a look at some new ideas for spring gardens. Seating is limited, for members only. Free.

APRIL 11 / MEMBERS' DAY

Arboretum Wildflower Walk

10 a.m. to noon, Shaw Arboretum. Come enjoy the dazzling display of jonquils and woodland wildflowers! Guides will provide special tours, so dress for walking. Reservations are required: please call 577-5138. For members only. Free.

EARTH DAY
1990
ST. LOUIS

APRIL 21 & 22

Earth Day Celebration Weekend

10 a.m. to 3 p.m., Climatron and Ridgway Center. The Garden hosts activities in conjunction with National Earth Day events being held in Forest Park. Dr. Peter H. Raven, director of the Garden, is honorary local chairman for Earth Day. *See activities listed under Saturday, April 21, and Sunday, April 22, next page.*

APRIL

2 MONDAY

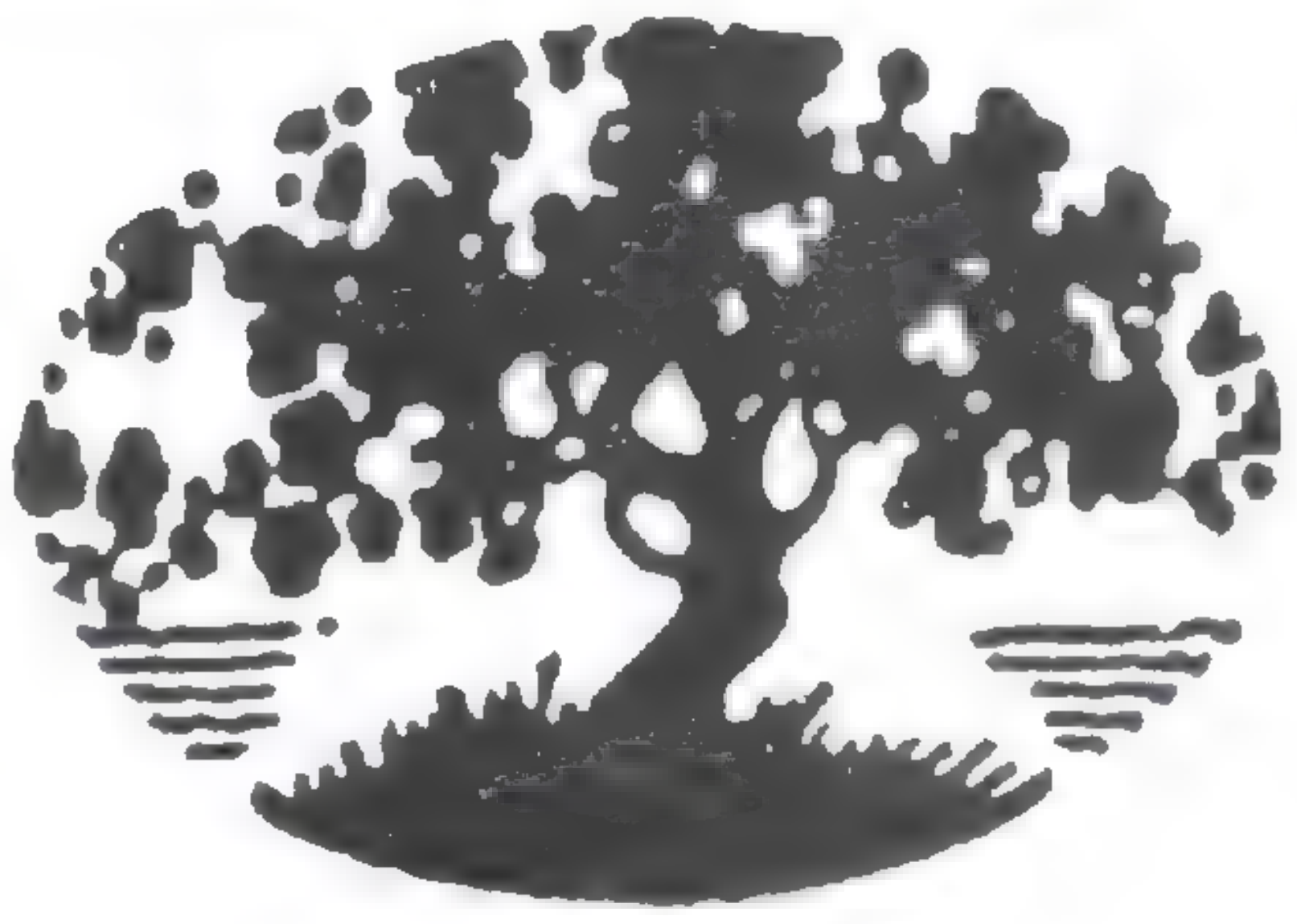
Plant Clinic

9 a.m. to noon, Ridgway Center. See March 5 for details.

5 THURSDAY

"Yanomamo"

10 a.m. and 7 p.m., Shoenberg Auditorium. A choral concert performed by students from Parkway School District. The Yanomamo Indians live in the rain forests of the Amazon basin; this musical was commissioned by the World Wildlife Fund UK to illustrate the tragedy of deforestation. Made possible by a grant from the CAMELOT / Special Projects Fund of the Arts and Education Council of Greater St. Louis. Free with regular Garden admission.



6 FRIDAY

Arbor Day Celebration

9 a.m. to 2 p.m., Ridgway Center. Slide lectures and films on tree selection and care. First 1,000 visitors receive a free tree seedling provided by the Missouri Department of Conservation. Free with regular Garden admission.

7 SATURDAY

MoBot Arbor Day Celebration

10 a.m. to 3 p.m., Ridgway Center. Free tree seedlings, fun activities, and more! For MoBots and their families only. Free.

14 SATURDAY

Carolyn Crawford Exhibit

9 a.m. to 5 p.m., through May 13. Botanical illustrations by Carolyn Crawford, whose work has been displayed at the Royal Horticultural Society Westminster Show in London, and at the Denver Botanic Garden. Free with regular Garden admission.

16 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See March 5 for details.

continued on next page

continued from page 13

21 SATURDAY

Earth Day Celebration

10 a.m. to noon, children's tours of Climatron, with Henry Shaw Academy students as guides; 10 a.m. to 3 p.m., first 1,000 children receive a tropical plant; information tables and educational materials in Ridgway Center. Free with regular Garden admission.

22 SUNDAY

Earth Day Celebration

10 a.m. to 3 p.m., information tables and educational materials in Ridgway Center. At 10 a.m., 1 p.m., and 3 p.m., Garden Guides will give interpretive tours of the Climatron. Free with regular Garden admission.

21-22 SATURDAY-SUNDAY

African Violet Show

9 a.m. to 5 p.m., Ridgway Center. The Metropolitan St. Louis African Violet Council holds its 36th annual juried show and sale, with displays in all colors ranging from micro-minis through large standards. Come find out more about this popular plant! Free with regular Garden admission.

26-29 THURSDAY-SUNDAY

Garden Gate Shop Spring Sale

9 a.m. to 7:30 p.m., Thursday and Friday, Members' Pre-Sale; 9 a.m. to 5 p.m., Saturday and Sunday, sale opens to the public. Orthwein Floral Hall and Shop. Members receive 20% discount on all merchandise, all four days. See page 20, and watch your mail for details.

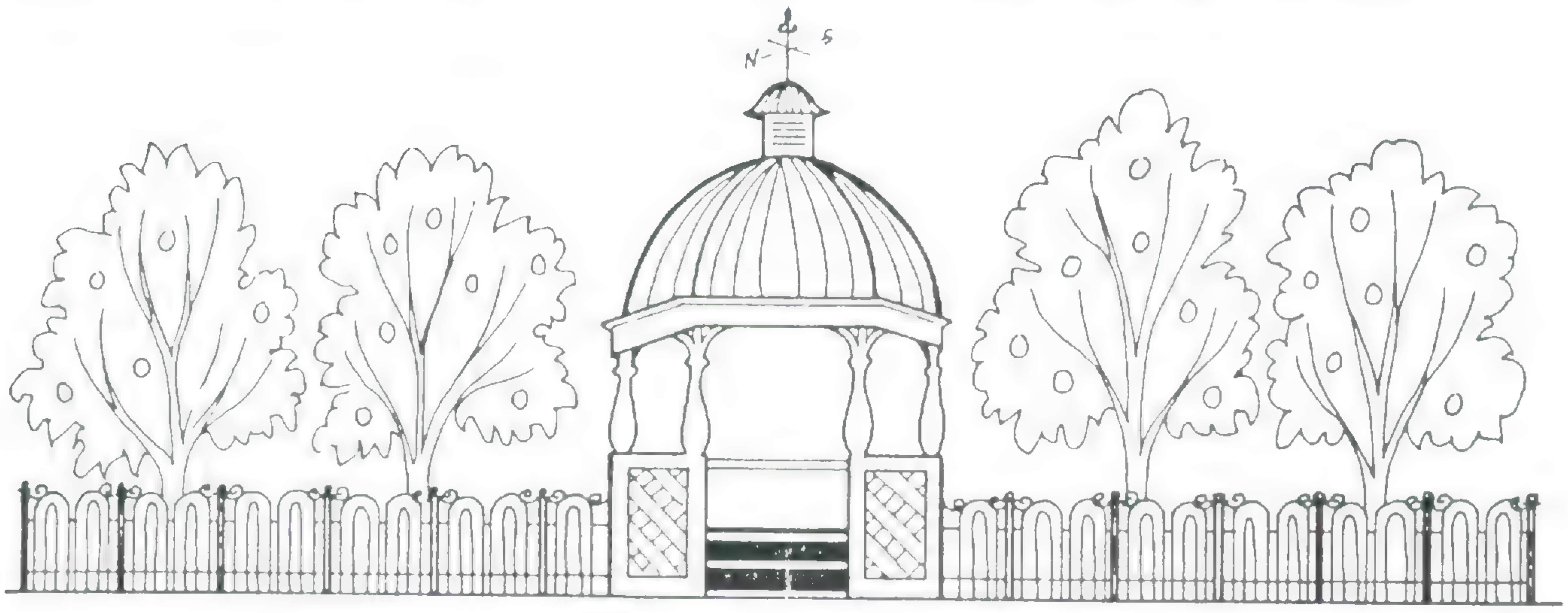
SPRING AT SHAW ARBORETUM

Loop Road and Wilderness Wagon at Shaw Arboretum

From April 4 through November 8 the Trail House Loop Road will be open to vehicles from 8 a.m. to 4 p.m. on Wednesdays and Thursdays. For safety reasons, visitors are asked to stop and register at the Visitor Center.

The Arboretum also will offer narrated tours on the popular Wilderness Wagon. The Wagon will run on Sundays from April 8 through June 24 and September 2 through October 28. Depending on the season, visitors may see thousands of daffodils, delicate wildflowers, the tall grass prairie, fall foliage, many species of birds and, with luck, deer or wild turkey. The Wilderness Wagon leaves the Visitor Center on an hourly schedule and stops at the Trail House. Visitors may spend time walking the woodland trails and return to the Visitor Center on a later trip. For more information please call the Arboretum at 577-5138.

COMING IN JUNE



St. Louis Garden Tour

SUNDAY, JUNE 10, 1990

The Missouri Botanical Garden Members' Board is sponsoring its third tour of some of the most beautiful private gardens in the St. Louis area.

This year's selection of gardens includes a well-known 1930s estate with a horse barn converted to a charming house and a variety of gardens and wandering paths. Another stop features a wonderful perennial garden surrounded by a rabbit-proof picket fence, a natural swimming pool with boulders and a waterfall, an apple orchard, and a gazebo.

A French country house laden with hanging wisteria graces another garden that includes an exquisite American elm, an abundance of perennial and annual flowers, a Japanese garden and woodland walk.

A charming city garden has a formal pool with a cascading terra cotta fountain specially designed for the pool area.

Magnificent trees and shrubs surround a contemporary house whose garden contains blooming plants and beautiful perennial and annual beds.

In the evening after the tour the Members' Board will host a garden tour finale party at a very special place, an estate with an authentic prairie garden filled with native flowers and grasses. The wooded property is enhanced with site-specific sculptures, a Bernoudy summer house and pool, and original Harriet Bakewell landscaping. The party will be a special ending to a very special day.

The St. Louis Garden Tour provides a rare opportunity to view a variety of unique and beautiful gardens and also offers local gardeners inspiration for their own landscaping.

Watch your mail for tour details and registration information for this members-only event. Participation will be limited.

New Officers and Board Members Elected

RICHARD BENKOF

NEW OFFICERS (left to right): Sue Rapp, president; Mary Randolph Ballinger, second vice president; Ellen Dubinsky, retiring president; June Kummer, secretary; Mary Longrais, first vice president. Not pictured: Donnell Reid, treasurer.

RICHARD BENKOF

NEW BOARD MEMBERS (front row, seated left to right): Jake Craig, Dave Murray, Florence Forbes. (Back row, standing left to right): David Metcalf, Martha Perine, Marilyn Fox, Susie Schulte, Holly Blumeyer, William Gilbert. Not pictured: Catherine Johnson.

Free Climatron Coloring Book

Children attending the Members' Climatron opening weekend preview, March 24 and March 25, will receive a free Climatron coloring book.

The *St. Louis Post-Dispatch* is sponsoring this special Climatron tour activity book that emphasizes the importance of the tropical rain forests.

These books also will be published in the March 30 edition of the *St. Louis Post-Dispatch*, and distributed to elementary schools in the St. Louis area.

The coloring book includes a free family pass for one visit to the Garden and Climatron.

ATTENTION MOBOTS!

Don't miss the

Arbor Day MoBot Event

at the Garden.

Saturday, April 7, 1990

10:00 a.m. to 3:00 p.m.

Free tree seedling, a bag of goodies,

fun activities and more.

COMING IN MAY

Mother's Day Luncheon

at the Garden

Co-sponsored by Missouri Botanical

Garden and Famous-Barr

Friday, May 11, 1990

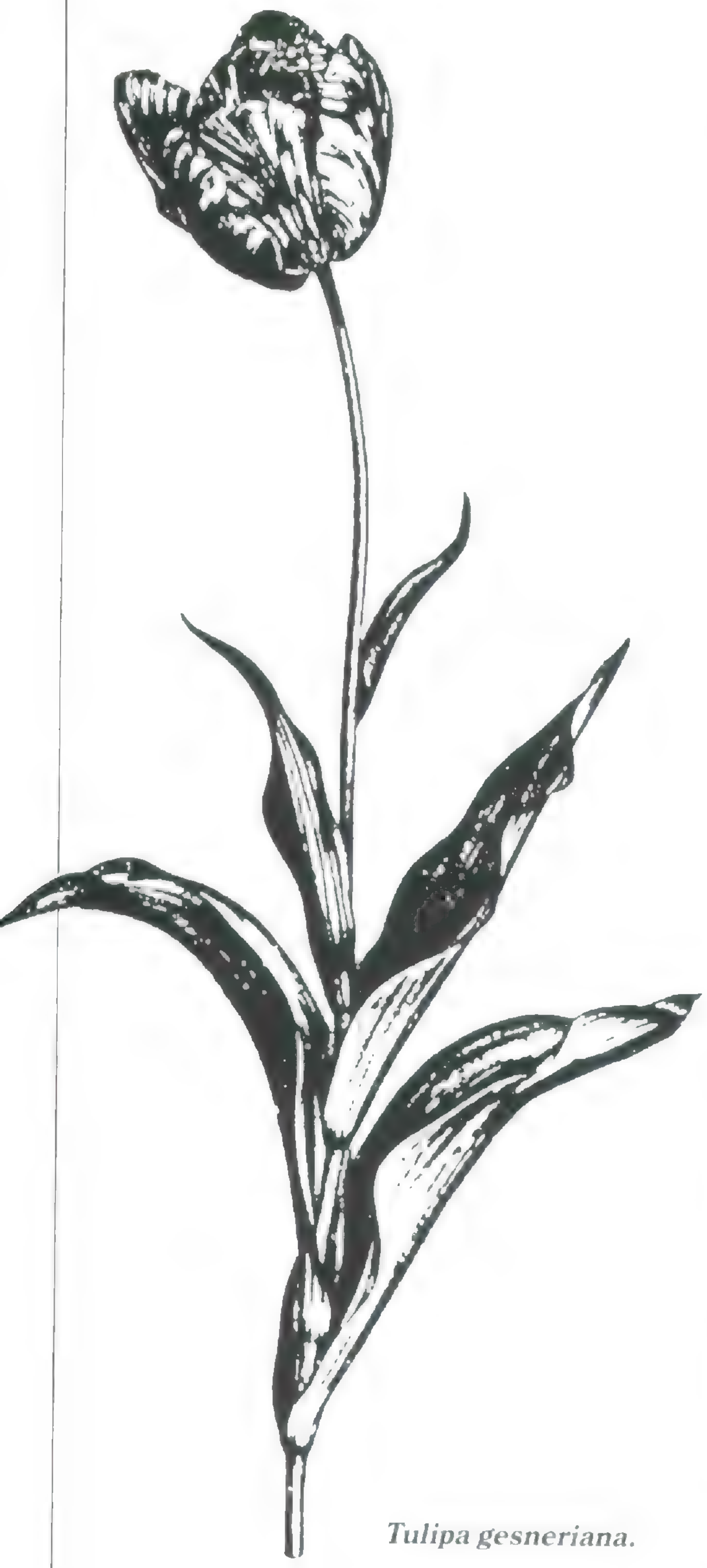
Watch your April mail for a special

members' invitation.

The Tower Grove House Auxiliary wishes to thank all the volunteers who helped to decorate the House for the recent holidays. The Victorian decorations were spectacular.

Plants at the Garden

Tulipomania



Tulipa gesneriana.

About 100 species of tulips grow wild from eastern Asia to the Mediterranean region. The exact natural western limit of tulips has been obscured by centuries of human activity and by escapees from cultivation. For instance, the yellow *Tulipa sylvestris* appears to occur wild in England but probably arrived there from the Middle East with returning crusaders.

Tulipa is just one of the 250 genera in the large Lily Family (Liliaceae). Tulips reveal their family membership by having flowers with six showy petal-like organs instead of having showy petals *and* non-showy sepals as in most other families. Distinctively, most tulips have solitary, upright, turban-shaped flowers. The Latin name *Tulipa* comes from the Persian word *thuliban* for "turban."

Most traditional tall, late-flowering tulip cultivars trace back primarily to *Tulipa gesneriana* from the Near East. *Tulipa suaveolens*, from the USSR and neighboring lands to the south, is the primary ancestor of most short, early-flowering cultivars. Thus the tremendous variation in size, coloration, and horticultural characteristics of older garden tulips comes from centuries of selection and breeding of some two percent of the wild species. Since the Second World War, however, Dutch growers have emphasized additional species in cultivation and in breeding.

The splendor of tulips has been appreciated probably about as long as people have been civilized. Around the eastern Mediterranean tulips cover fields as wildflowers. There the original rose-of-Sharon in the biblical Song of Solomon was probably *Tulipa sharonensis*. (Modern gardeners refer to the eastern Asian *Hibiscus syriacus* as the rose-of-Sharon.)

Multicolored selections were grown during the 13th century in Persia, where traditionally a suitor presented his beloved with a scarlet tulip to symbolize his burning passion. The black base of the flower signified sufficient ardor to scorch the heart. Tulips pervade Turkish culture, appearing in designs on fabric, tiles, and porcelain. By 1730 over 1300 cultivated tulip selections were listed in Turkey.

With some exceptions as noted above, it is from Turkey that cultivated tulips first reached western Europe, through the initiative of Ogier G. de Busbecq, Austrian Ambassador to Solyman the Magnificent, Sultan of the Turkish Empire. The Ambassador fell in love at first sight with tulips upon encountering them in 1554 near Constantinople (Istanbul) and sent some home to Vienna, where they fared well. Then Viennese bulbs were sent to England by the Dutch botanist Carolus Clusius, who is often credited with founding the tulip industry in the Netherlands. Clusius' contribution was being the victim of a tulip theft in 1593. The flowers filched from his collection were widely propagated and undoubtedly influenced Dutch tulip horticulture.

Yet tulips were in the Netherlands in 1562 prior to the theft from Clusius. The earlier arrivals probably came from Augsburg, Germany, which was the center of 16th century commerce between northern and southern Europe. That city was home to the merchant Fugger family, who had tulips in their garden, no doubt obtained through their far-flung trade network. The Fugger's flowers were publicized in print in 1561 and touched off a tulip fad that incubated among the rich and subsequently embraced all social classes while sweeping across Europe. The fad grew into a craze that culminated in "tulipomania" in the Netherlands 1634-1637. Tulip prices there soared to absurd heights, which spawned rampant financial speculation and gambling in tulips, making and breaking fortunes. In one transaction, a bulb of the precious cultivar 'Viceroy' fetched 2 lasts (or cartloads) of wheat, 4 lasts of rye, 12 fat sheep, 2 hogsheads of wine, 1 bed, 1 suit of clothes, 4 fat oxen, 8 fat swine, 4 tuns (or casks) of beer, 2 tuns of butter, 1 silver drinking horn, and 1000 pounds of cheese. Tulipomania withered in 1637 when the market crashed, and tulip-wealthy speculators wound up the poor possessors of suddenly worthless bulbs. Perhaps "worthless" is a little strong, for from the ashes of the tulip craze sprouted the more staid Dutch bulb industry.

Everyone knows that tulips are pretty, but perhaps you did not know that their bulbs are edible. (But don't nibble, since some bulbs are treated with pesticides.) They helped nourish the Dutch in hard times of war. And tulip eating has caused at least one documented catastrophe. A Dutch merchant invested a fortune in advance for a single bulb of the coveted 'Semper Augustus'. When he went to his warehouse to pick up the newly delivered treasure, the proud owner found that an employee had just enhanced his herring dinner with an "onion" he found on the table.

At the Garden this spring, you can enjoy tulip displays in the Samuels and Heckman Bulb Gardens. Depending on the weather, expect peak blooming toward the end of April.

—George Rogers, Ph.D

NEWS FROM THE GARDEN LIBRARY

Recataloging Project Is Complete

February 28, 1990, marks the end of a project begun in the 1960s to recatalog the book and journal collections of the Garden's library. The library, founded by Henry Shaw, has grown from 1,077 bound volumes listed in an 1889 inventory to more than 110,000 volumes today. In addition to the general collection on plant taxonomic and floristic literature, the library has several rare book collections, including books dating to 1474, many interesting travel accounts, and a collection of more than 1,000 folios, volumes important for their full-size plant illustrations and research value.

Until the late 1960s, the library's collections were cataloged by the "Trelease System." William Trelease, who was appointed Director of the Garden following Henry Shaw's death in 1889, was largely responsible for devising this classification system, which was used only at the Garden and served the library during its early years.

As the library grew into an international repository of botanical information, ease of communication with other libraries made it necessary to convert to the Library of Congress Classification System. Eugenia Maddox, Garden Librarian from 1968 to 1972, began the task of recataloging from the Trelease System to the Library of Congress System. Grants from the Sunnen Foundation, Pew Charitable Trusts, and the U.S. Department of Education, along with Garden support, provided the necessary staff and equipment to begin the recataloging.

OCLC

In 1978, the Missouri Botanical Garden, along with The New York Botanical Garden, began to supply this recataloging data to the databases of the Online Computer Library Center (OCLC). The OCLC database makes the combined records of the two strongest botanical garden library collections in the United States accessible to more than 10,000 libraries worldwide. The database of botanical titles will continue to grow rapidly in the next several years as the Garden and The New York Botanical Garden place a large backlog of materials into the database. At the Garden the cataloging staff have no concerns about lacking enough work to do!

The next step, along with cataloging the backlog, is to use the information gathered in electronic form through OCLC to plan an integrated online library system that will fully automate the information held in the two libraries. This system also will be compatible with TROPICOS, the research database developed here at the Garden, and eventually with other databases as well. Thus the project begun in the 1960s to recatalog the collection will go beyond its original intent by becoming part of a much larger body of botanical information that can be shared electronically throughout the world.

KELLY

The Library's cataloging staff (left to right): Zoltan Tomory; Kathy Nystrom, head of cataloging; Mary Otto; Maureen Herraghty; Linda Hintz.

KELLY

Vicki Lee

New Conservator Named to Shoenberg Center

The Garden library is pleased to announce that Vicki Lee has joined the staff as library conservator. Vicki received her Diploma in Advanced Bookbinding in June 1989 from the North Bennet Street School in Boston and her Bachelor of Arts Degree in 1983 from Blackburn College in Carlinville, Illinois. She has done conservation work for the libraries of the Harvard Business School and the Art Institute of Chicago. Her work has been exhibited in several public shows, including one at the Boston Public Library.

As conservator, Vicki will plan, organize, and supervise Shoenberg Conservation Center activities, as well as perform conservation work. Vicki also will train and supervise a staff person and several volunteers (see next page for further information) to perform conservation treatments such as book repair and the construction of protective boxes.

Conservation of collections at the Garden library is especially important

continued on next page

New Botanical Garden Subdistrict Commissioner

Theresa Loveless

Theresa E. Loveless was recently approved by County Executive H. C. Milford to serve as a member of the Botanical Garden Subdistrict Commission from St. Louis County. The Subdistrict is comprised of ten members, five from St. Louis City and five from St. Louis County. It serves as the public body responsible to receive and disperse funds received through the property tax support approved by voters in 1983.

As a resident of St. Louis County, Theresa has been an active participant in volunteer efforts. She is the recent past-president of the Delta Sigma Theta Sorority, a member of the Board of Directors of the Youth Services Network, and Executive Secretary of the Berean House Christian Care Center that serves as an emergency shelter and soup-kitchen. As vice-president of programs of Leadership St. Louis Inc., Theresa has remained involved in leadership activities in the metropolitan St. Louis area.

Presently, Theresa holds the position of Associate Executive Director of the Girl Scout Council of Greater St. Louis, the largest council in the United States.

"The Garden is one of the best educational and recreational resources in this community and I am pleased to become involved and look forward to my work with the Subdistrict Commissioners," said Ms. Loveless.

Behind the Scenes

Climatron Manager Named

Dr. John MacDougal, a botanist on the Garden staff, has been named conservatory manager for the new Climatron display complex, effective January 16, 1990. The complex, set to open March 30, 1990, is comprised of the renovated Climatron, the new Shoenberg Temperate House that replaces the Mediterranean House, and the new Brookings Interpretive Center that links the two.

As conservatory manager, MacDougal is responsible for the creation and direction of the extensive plant displays in these conservatories. In addition to overseeing day-to-day operations and supervision of staff and volunteers, MacDougal will coordinate collaborative activities between the horticulture and research divisions.

MacDougal received a Ph.D. in botany from Duke University in Durham, North Carolina, and a B.S. in biology from the College of Charleston in Charleston, South Carolina. His field work in the tropics studying his specialty, the Passifloraceae family of plants (Passionflower vines), gave him great exposure to tropical plants, the main component of the Climatron. In addition to his botanical work, MacDougal gained greenhouse experience at Duke University.

In 1987 MacDougal came to the Missouri Botanical Garden as a postdoctoral fellow with the Flora Mesoamericana project.

John MacDougal

LIBRARY NEWS continued from page 17

because many of our materials are rare, or even unique, and they need to be protected to ensure their future value. Vicki's work will guarantee that these materials will be available to researchers for many years to come.

Conservation Center Needs Volunteers

The library is seeking volunteers to work in the Shoenberg Conservation Center. Duties will include book and paper repair and the construction of protective enclosures. Manual dexterity, attention to detail, and an interest in book conservation are needed. For further information, call Jeanne McGilligan at 577-5187.

Adopt-A-Book

The library offers individuals an opportunity to sponsor the conservation of a book. Such sponsorship may be made in memory of a loved one or on behalf of a friend. Donations might be $50 for rebinding a book or providing a custom-made box; several hundred dollars for leather rebinding; or $1000 or more to restore completely a leather-bound book or to conserve a set of books. For additional information on ways in which you may provide financial support for book conservation, please call the Development Office, 577-5120.

Heckman Bulb Garden To Debut this Spring

The Heckman Bulb Garden, recently developed through a generous gift from Mr. and Mrs. William G. Heckman, will bloom for the first season this spring.

The new bulb garden, situated just east of the Climatron, will greatly expand the selections of flowering bulbs blooming on the grounds. Spring has always been a favorite season among Garden members and visitors because of the wide array of colorful blooming flowers on display. Late April to early May is the peak time for spring flowering bulbs.

The Heckman Bulb Garden will feature popular flowers, including tulips, daffodils, crocuses, and fritillaria. A highlight of this bulb garden will be the inclusion of summer flowering bulbs, including lilies, gladiolus and agapanthus, which will expand the length of time members and visitors can enjoy the beauty of flowering bulbs.

BOARD OF TRUSTEES HOLDS ANNUAL MEETING

The Garden's Board of Trustees held its annual meeting on January 24, 1990, with president Robert E. Kresko presiding. Elected as officers were Kresko; O. Sage Wightman III, first vice president; John K. Wallace, Jr., second vice president. Michael S. Olson, controller, was elected as secretary, and Cheryl Mill as assistant secretary.

Jules D. Campbell and Sydney M. Shoenberg, Jr., were elected Emeritus Trustees. Mrs. Walter G. Stern was named a Life Trustee.

Samuel B. Hayes and Lucius B. Morse III were re-elected to three-year terms. Jack E. Thomas was newly elected to the Board for a three-year term.

THOMAS O. MCNEARNEY JR. JOINS BOARD

Thomas McNearney

In December, 1989, Thomas O. McNearney, Jr., was appointed to the Garden's Board of Trustees as an *ex-officio* member. McNearney is the new president of the St. Louis Academy of Science, named to the post in December, 1989. Under the terms of Henry Shaw's Will, the president of the Academy and his successors are to serve on the Garden's Board by virtue of their position.

The St. Louis Academy of Science, established in 1856, seeks to educate and inform the public about science. McNearney has been active in the Academy for 12 years, and succeeds Jules D. Campbell as president. Mr. Campbell has been elected an Emeritus Trustee of the Garden.

McNearney has a lifelong interest in science and science education. A graduate of St. Louis University High School, he holds a B.S. in chemical engineering from Massachusetts Institute of Technology, and an M.B.A. from Harvard Business School. "I am looking forward to expanding my scientific interest to botany," McNearney said.

Dr. Peter H. Raven, director of the Garden, said, "We are extremely pleased to welcome Mr. McNearney as a Trustee. His ongoing interest in and pursuit of the advancement of the field of science will most certainly complement our work here at the Garden."

McNearney has lived in St. Louis County all his life. He is active in many local organizations, including the American Association for Advancement of Science, the President's Council of St. Louis University, and many professional societies. He was formerly chairman of the board and chief executive officer of St. Louis Federal Savings & Loan Association, and today he owns Uniglobe Ambassador Travel, Inc.

RESEARCH ASSOCIATE

David S. Seigler / *Plants and Poisons*

David S. Seigler, a Garden research associate, is professor and head of the Department of Plant Biology at the University of Illinois in Urbana. Dr. Seigler joined the University in 1970 and also holds appointments in the Departments of Entomology and Horticulture. He is a native of Texas and earned his doctorate in organic chemistry at the University of Oklahoma. He has written or co-written approximately 100 scientific papers and edited two books.

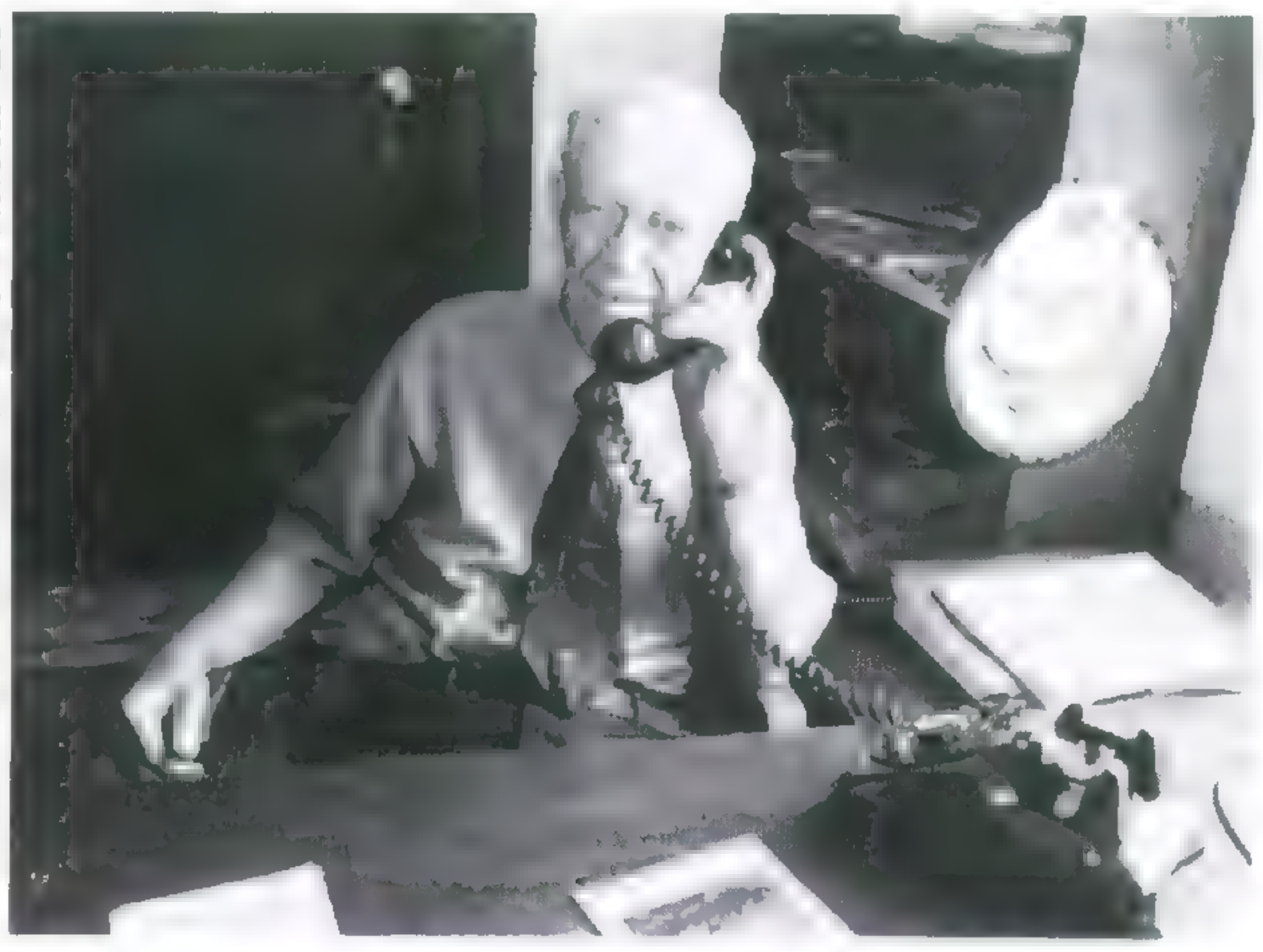
My principal research interest is the role of plant secondary compounds in biological interactions. I have had a long-term interest in cyanogenic compounds (chemicals capable of releasing cyanide) found in plants. With my students and other collaborators, I have isolated and described a number of new cyanogenic compounds, and examined their involvement in plant-insect interactions.

For example, my studies of cyanogenesis in *Acacia*, a member of the legume, or bean family, have shown that the presence of cyanogenic glycosides and tannins in several species of ant acacias suggests that the prevalent theory that ant-protected plants do not need chemical defenses is not general. My collaborators include Drs. Eric Conn, Bruce Maslin, John Ebinger and David Clarke as well as several other students.

I also study the role of plant secondary compounds in the diets of primates. Many animals eat large quantities of poisonous compounds without ill effects; for instance, research in Madagascar revealed that the golden lemur consumes a daily diet containing many times the amount of cyanide (in proportion to its size) required to kill a human.

This past August I was a participant in the conference on the family Euphorbiaceae held at the Garden. The Euphorbiaceae, an extremely rich and diverse family, is especially important in the tropics. Many of these plants are of particular interest to chemists as almost all major groups of plant compounds are represented. Although little investigated, the Euphorbiaceae promises to be a rich source of interactions which are chemically mediated.

IN MEMORIAM / *Dan O'Gorman, "The Answer Man"*


MISSOURI BOTANICAL GARDEN ARCHIVES

A member who represented a special era in the Garden's history passed away on January 29 at the age of 92. Dan O'Gorman was one of the original Garden volunteers recruited in the late 1960s to answer telephone questions about gardening, a feature that has become today's Answer Service. Mr. O'Gorman's Irish wit and wonderful observances of life made him the spirit behind the original "Answer Man" service.

A native St. Louisan, son of Dr. Daniel D. O'Gorman, Dan was a chemist for the St. Louis City Water Department. His avocation was gardening, and his specialty was growing exhibit chrysanthemums. He was a former president of the St. Louis Horticultural Society, and was active in the Richmond Heights Men's Garden Club, the Greater St. Louis Dahlia Society, and the Men's Garden Club of America.

Dan O'Gorman was one of the stalwarts among Garden volunteers, recognized with the Volunteer Emeritus Award after 30 years, and later a Diamond Pin for 50 years of service. He was always ready to share his time and knowledge during his devoted participation at the Garden. He will be remembered as a man of humor, of generosity, and of joy. He will be missed.

Korean Plants Come to the Garden

An exciting program sponsored by the United States National Arboretum has made it possible to identify, collect, and introduce new plants from South Korea to the St. Louis area.

Jim Henrich, the Garden's horticultural coordinator, visited the Republic of Korea's northeastern region last May and June as part of a team of American horticulturists who were seeking to identify varieties of ornamental plants hardy in cold weather.

Northeastern Korea is at roughly the same latitude as St. Louis, and is home to many desirable genera and species, some of which are new to this country. Other teams sponsored by the National Arboretum had previously investigated other areas of Korea.

Henrich's group located and tagged desirable plants and made herbarium specimens. Last fall another team made a final visit to collect seeds from the tagged plants. Representative samples of those seeds are being propagated here at the Garden, and eventually will be planted on the grounds or at the Arboretum.

The other members of Henrich's group were: Sylvester March of the National Arboretum; Paul Meyer of the Morris Arboretum; Richard Hawke of the Chicago Botanic Garden; and Dr. Chin-Sung Chang of the Republic of Korea.

From the Garden Gate Shop

Spring Sale Has 20% Discount for Members

Members' Pre-Sale:
Thursday and Friday
April 26 and 27, 1990
9 a.m. to 7:30 p.m.

Sales Opens to the Public
Saturday and Sunday
April 28 and 29
9 a.m. to 5 p.m.

The Shop's spectacular annual Spring Sale features bedding plants, perennials, azaleas, roses, herbs and blooming baskets, just in time for the return of the growing season. Members receive 20 percent off all merchandise and plants, all four days.

Featured for Easter

Easter will be blooming at the Garden Gate Shop with gift plants for spring. The Shop is brimming with the latest merchandise for Easter, including bright colorful baskets, stuffed bunnies, Easter tree ornaments and other seasonal decorations. Your garden will be full of color if you plant some of the Shop's varieties of seeds. Unusual wildflowers, perennials, ornamentals, herbs and many interesting varieties of annuals and vegetable seeds will be available.

Planned Giving

Free Wills Clinic on March 29

"What difference can a will make to my family's future?" "What will happen to my estate if I don't prepare a will, or if I don't review my will regularly?"

These are the kinds of questions that will be answered at the free Wills Clinic to be held on March 29 at 6:30 p.m. in the Garden Room at the Ridgway Center.

The Clinic will provide information in a relaxed and informal way about what a will can do for you, the proper way to execute a will, and when an existing will should be revised. Wills do not expire but they *do* become obsolete! The most current information will be provided by John Valentine of Lewis, Rice and Fingersh Attorneys at Law.

To reserve a place, or for more information about the seminar or the Planned Giving Program, call Ernestina Short at 577-9532.

Moving? Please Remember To Send Us Your New Address.

To avoid missing any of your membership mailings, you *must* give us your new address at least three weeks *before* you move. Please enclose the mailing label on the back cover of this *Bulletin*, and mail to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

Name:________________

Old Address:

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City________________

State________ Zip________

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City________________

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continued on next page

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CLIMATRON OPENING WEEKEND
For Members Only

Saturday & Sunday, March 24 & 25, 1990

9 a.m. to 5 p.m.

(Climatron complex opens to the public March 30, 1990.)

Don't miss this special preview just for Garden members! Be one of the first to tour the Climatron, the new Brookings Interpretive Center and the new Shoenberg Temperate House. Animals from the St. Louis Zoo will be on display, and Garden Guides will be on hand to answer questions. A slide presentation and film will be shown throughout the day in Shoenberg Auditorium. Children will receive the new Climatron Coloring Book, sponsored by the *St. Louis Post-Dispatch*.

Also for Members Only

RAIN FOREST SAFARI PARTY

Sponsored by Famous-Barr

Friday, March 23, 1990

7:30 to 11:30 p.m.

Join us in your festive jungle attire for a celebration in the Climatron complex, with music, tropical refreshments and party favors. Reservations are limited. See invitation mailed recently to all members, or call 577-9500.

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On the cover: The Climatron is the jewel of the Garden once again.
— *Photo by King Schoenfeld*

1990 Missouri Botanical Garden.

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The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $40 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Susan Wooleyhan, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

The Climatron Is Open!

After more than two years of intense effort, the Climatron has been reopened and will be open the same daily hours as the Garden. Exceptional recognition must be given to the Garden Trustees and thousands of donors who, through their magnificent financial support, made this renovation possible. The overwhelmingly generous contributions from Mrs. Hermann F. Spoehrer, the National Science Foundation and the Kresge Foundation allowed the Garden, during a period of extremely tight finances, to move ahead on schedule with the necessary improvements.

At the ceremonial ribbon-cutting we officially returned this precious resource to all St. Louisans. The new Climatron is much more than a unique geodesic dome greenhouse. Today it is one of the finest educational facilities in the region, promoting understanding of tropical rain forests.

The leaders of our community joined in this grand reopening and I want to thank personally Congressman Richard A. Gephardt; State Senator John Bass; State Representative Thomas P. Stoff; St. Louis City Alderman John Koch; Michael E. Pulitzer, president of the Pulitzer Publishing Company; Robert E. Kresko, president of the Board of Trustees; Mrs. Rudyard K. Rapp, president of the Members' Board; and representatives of Mayor Vincent C. Schoemehl, County Executive H. C. Milford and the Missouri Department of Natural Resources for participating in the ceremony.

With the official opening of the Climatron Complex, including the Brookings Interpretive Center on the Tropics and the Shoenberg Temperate House, the Garden celebrates the successful completion of the largest component of its $18 million capital campaign. A groundbreaking of the William T. Kemper Center for Home Gardening on May 8 will mark the beginning of the last major phase of this capital campaign that has only been possible because of the generous and continuous support of our members.

As we move into summer, I hope you will join us for all the delightful activities coming up, including the annual celebrations of Rose Evening and Purple Martin Evening. The very special Garden Tour and Party in June will be a special treat. I invite you to enjoy and learn from all the Garden has to offer in the months ahead.

Thank you and welcome back to the Climatron.

Peter H. Raven

L. A. KELLY

SHOENBERG FAMILY AT DEDICATION OF NEW TEMPERATE HOUSE on March 7, 1990 (Left to right): Mrs. David Wimsatt, Walter Stern, Stephen Zwick, Mrs. Arnold Horween, Mrs. Walter Stern, Sydney Shoenberg, Mrs. Raymond Peters, Mrs. John Shoenberg, Raymond Peters and Mrs. Stephen Zwick.

RICHARD BENKOF

CLIMATRON REOPENS

Above: Peter Raven looked on as Harriet Spoehrer cut a garland of orchids to officially open the Climatron, March 30, 1990.

It was a grand occasion, the climax of weeks of anticipation. At 11:00 a.m. under the bright lights of television and flashbulbs, the ceremony began. At noon, with the snip of a scissors through a garland of orchids, the renovated Climatron opened to the public.

A second garland of flowers was also cut, officially opening the new Shoenberg Temperate House. The ceremony was held in the Brookings Interpretive Center on the Tropics, which links the Climatron and the Temperate House. Together the three facilities constitute the new Climatron complex.

Even a spring downpour could not dampen the spirits of the crowd that turned out, eager to see the new displays. The ceremonies featured remarks by a number of special guests, including Michael E. Pulitzer, president of the

MISSOURI BOTANICAL
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MARCH 30, 1990

This page, top left: Peter Raven, standing at the podium, welcomes the honored guests. Seated, front row, left to right: John Koch, Michael Pulitzer, Robert Kresko, Richard Gephardt, Tamra Raven, Harriet Spoehrer. Back row, left to right: William Woo, Sue Rapp, Tom Stoff, John Bass.

Above right: Congressman Richard Gephardt delivered the keynote address.

At left: Winners of the Climatron poster contest were (pictured left to right): Craig Lennox, John Caldwell, Roxanne Henry. Not pictured: Danielle Semsrott, Lori Brandes, Robin Bradshaw, and Colleen Hipp.

Pulitzer Publishing Company; The Honorable Thomas P. Stoff, Representative to the Missouri House, 64th District; The Honorable John Bass, Missouri Senator, 4th District; and The Honorable John Koch, Board of Alderman, 8th Ward, City of St. Louis. Robert E. Kresko, president of the Garden's Board of Trustees, recognized many supporters for their contributions, and Mrs. Rudyard K. Rapp, president of the Garden Members' Board, introduced the winners of the Climatron poster contest. Mrs. Hermann F. Spoehrer cut the garland of orchids to open the Climatron.

The keynote address was delivered by The Honorable Richard A. Gephardt, majority leader of the United States House of Representatives from the 3rd District of Missouri. The Congressman was introduced by the

This page, top: A display in the Brookings Interpretive Center on the Tropics explains the consequences of deforestation.

Below, left: The St. Louis Zoo displayed animals in the Climatron throughout the opening weekend. This python felt right at home.

Below, right: The March 30 ceremony also marked the official opening of the Shoenberg Temperate House.

Garden's director, Dr. Peter H. Raven, who recognized the many political and public leaders attending, and thanked the *St. Louis Post-Dispatch* for its sponsorship of the opening weekend. Dr. Raven also thanked the assembled audience of distinguished friends of the Garden for their support during the two-year renovation of the Climatron complex.

Congressman Gephardt said, "I grew up not far from here, and have spent many hours in [the Garden]. . . . it is one of the magnificent . . . locations not only in our state but in the entire country and the world.

". . . I'm happy to be here with Dr. Raven, who I think is a great national resource . . . . I am proud he is in my community and making this Garden . . . such an effective organization.

continued on next page

KING SCHOENFELD

KING SCHOENFELD

This page, top left: A lizard from the St. Louis Zoo enthralled young visitors.

Above, right: Crowds toured the new displays throughout the weekend. Garden Guides were on hand to answer questions.

At left: The Brookings Interpretive Center also was officially opened on March 30.

"... This is an ongoing project... all of the activities here are extremely important to two... issues in our country and our world. One is preserving our environment... across the world. These structures and these facilities... will increase our understanding... so that we can do a better job of preserving that environment.

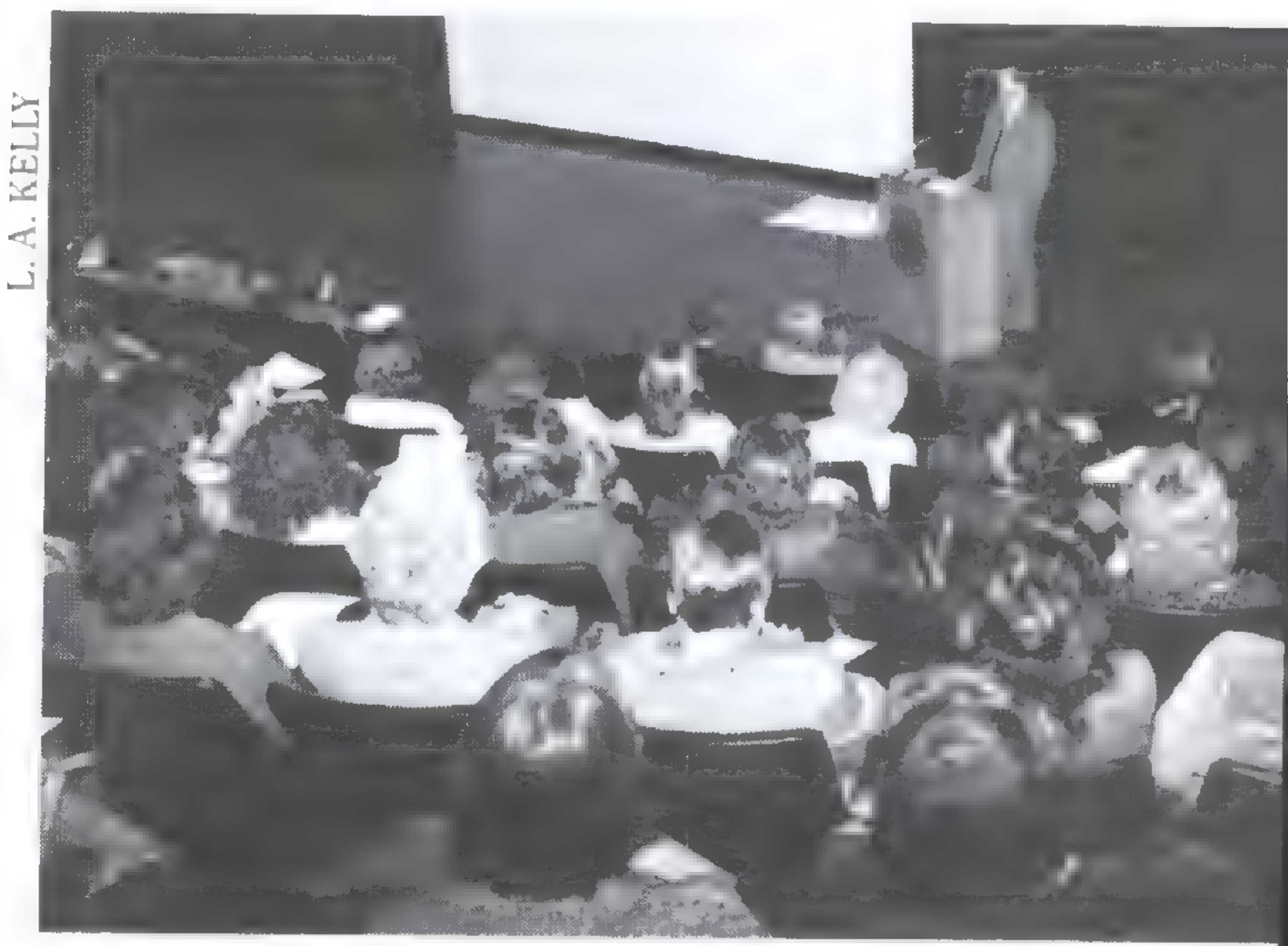
"And finally, education. We will not protect our environment even with the latest ideas if we don't convince all of us that we have a stake and role in protecting the environment. This effort, these buildings, this organization and all of its efforts will increase the understanding and the knowledge of our people so that truly we can say that we have protected this precious environment."

The Garden extends very special thanks to the St. Louis Post-Dispatch *for sponsoring the public grand opening of the Climatron.*

As of March 31, 1990, the capital campaign had raised $17,919,817 in gifts and pledges.

At left: More than 400 St. Louis area teachers attended a Climatron Preview on March 5.

Below: Larry DeBuhr, the Garden's new director of education, acquainted teachers with educational opportunities and resources at the Garden.



CLIMATRON REOPENS

TEACHERS' CLIMATRON PREVIEW

On March 5, 1990, more than 400 educators from St. Louis area schools were treated to a special orientation tour of the Climatron. Staff members distributed information about the educational materials the Garden has developed on the Climatron, the tropical rain forest, and the environment. These materials, including a free lesson book, course offerings, brochures, tours, and the Climatron Coloring Book, are designed to help teachers present environmental topics in their classrooms and utilize the facilities at the Garden in teaching natural science.

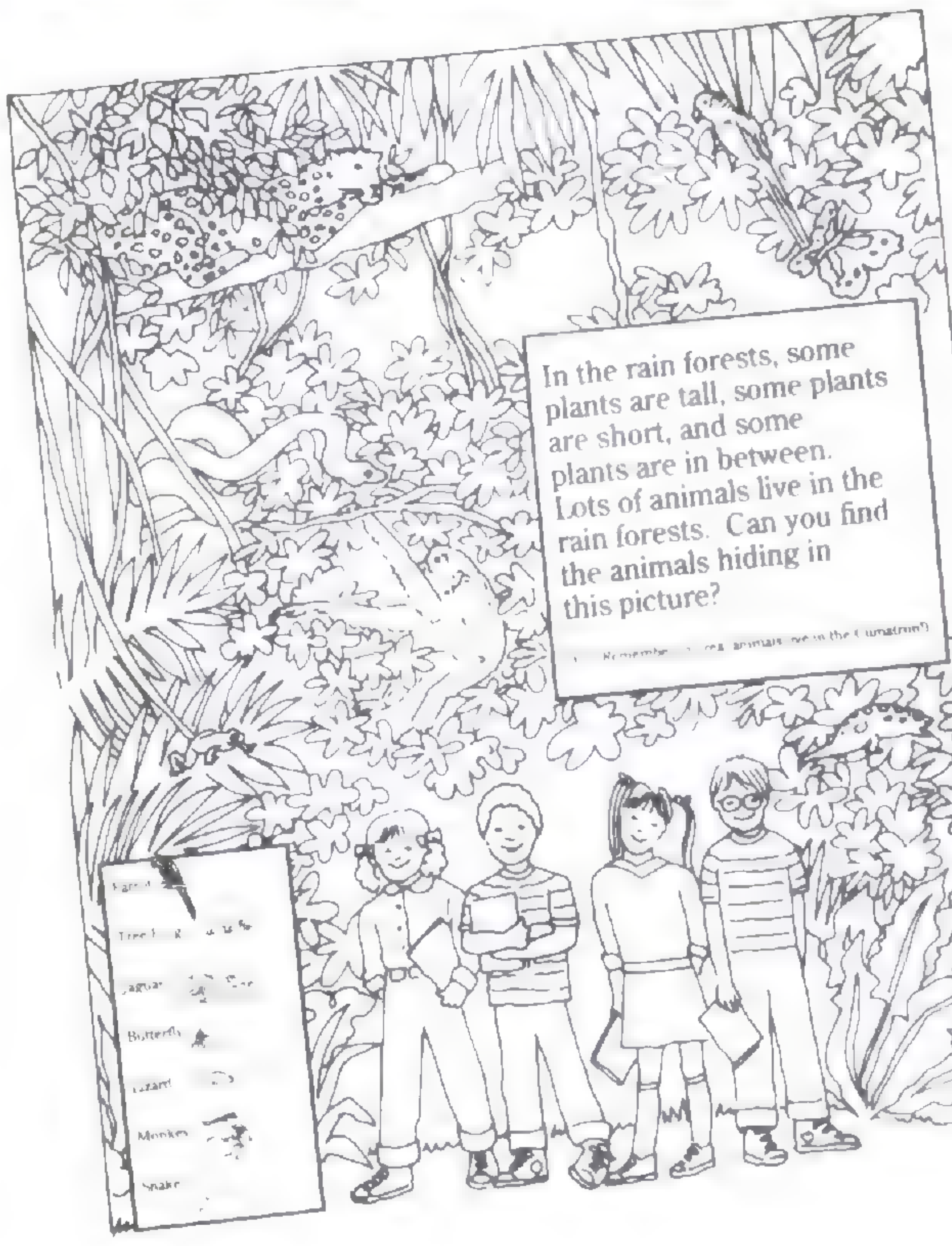
To date, more than 100 schools have requested publications. Teachers can order the free lesson plan books (for grades K-12) and the free coloring books (for grades K-3) by calling 577-9500. Information on courses and educational tours is available from the Garden's education division, 577-5140.

THE CLIMATRON COLORING BOOK

The Garden and the *St. Louis Post-Dispatch* have teamed up to produce "The Climatron Coloring Book: A Return to the Rain Forest." The book takes children on a tour of the new Climatron, explaining the ecosystem of the rain forest in simple language and delightful pictures. Each page features an activity that is both instructive and fun (for grades K-3).

Written by Garden staff and illustrated by Shelley Dieterichs, the project was printed by the *Post-Dispatch* and distributed in its Friday, March 30 issue to coincide with the public opening of the Climatron. The *Post-Dispatch* also furnished 100,000 additional copies to be distributed free of charge to schools and visitors.

"The Climatron Coloring Book" is printed on recycled paper.



In the rain forests, some plants are tall, some plants are short, and some plants are in between. Lots of animals live in the rain forests. Can you find the animals hiding in this picture?

Above: A page from the "Climatron Coloring Book."

Raven Elected to Australian Academy of Science

On March 5, 1990, in Canberra, Australia, the Garden's director Dr. Peter H. Raven was received as a newly elected corresponding member of the Australian Academy of Science. The Australian Academy, established in 1954 to "promote, declare and disseminate scientific knowledge . . . " is the principal honorary scientific society of Australia. A group of 12 corresponding members, which Dr. Raven now joins, are individuals whom the Academy considers to be "eminent in respect of scientific discoveries and attainments," but who are not normally resident in Australia. Dr. Raven and his wife, Tamra, conducted extensive field work in Australia in 1970 in connection with their joint botanical studies.

Dr. Raven is also an honorary member of the national academies or similar bodies of Denmark, India, Italy, New Zealand, Sweden, and the U.S.S.R.

Raven Honored by Leiden University

On February 8, 1990, Dr. Peter H. Raven, director of the Garden, was awarded an honorary doctor's degree from Leiden University, the oldest university in The Netherlands. The University was founded on February 8, 1575. Honorary degrees are generally awarded by the University every five years. The ceremony was held in the beautiful St. Peter's Church, where the Pilgrims worshiped during the years they spent in The Netherlands, 1609-1620. Dr. Raven was honored for his work in the systematics and evolution of the evening primrose family, Onagraceae.

The next day, Dr. Raven delivered the inaugural address for a year of celebrations commemorating the 400th anniversary of the founding of the Leiden Botanical Garden. He was awarded a silver medal to mark the occasion by J. J. M. Beenakker, Rector Magnificus of the University. The Leiden Botanical Garden, founded in 1590, is one of the oldest in the world.

The Garden has strong research connections with Leiden University. Professor Dr. C. Kalkman, who spoke in Dr. Raven's honor at the degree ceremony, is head of the Rijksherbarium (state herbarium), where studies concentrate on the plants of Indonesia and other areas of tropical Asia. The Rijksherbarium's major work in *Flora Malesiana*, initiated in 1950, which treats all of the plants of the area.

Above: Weatherman Dave Murray and his wife Janis predicted snow, but everyone came anyway.

Above: Special thanks go to the party committee. Pictured, left to right: Ellen Dubinsky, Leslie Dimit, Sue Oertli, Sue Rapp, Susie Yoder, and John Thiebauth. Not pictured: Holly Brigham, David Mason, and Ted Bakewell, III.

Above: The "Medicine Man" exhibit explained products derived from tropical forests.

SAFARI PARTY—

A WALK ON THE WILD SIDE

The snow-storm outside was frightful, but the intrepid adventurers who turned out for the Rain Forest Safari Party were undeterred. Friday, March 23, the Climatron was the setting for a marvelous members' preview party, sponsored by Famous-Barr. Special thanks go to the St. Louis Zoo, which brought a variety of animals to add to the fun.

Top, left: The llama from the Zoo took it all in stride.

Top, right: The buffet of tasty tropical treats featured festive decor by the St. Louis Scene.

At left: Caribbean rhythms by the Cambooley Folk Performers set toes tapping.

At right: Safari attire was the outfit of choice for making friends with a lizard.

RICHARD BENKOF

Home Gardening

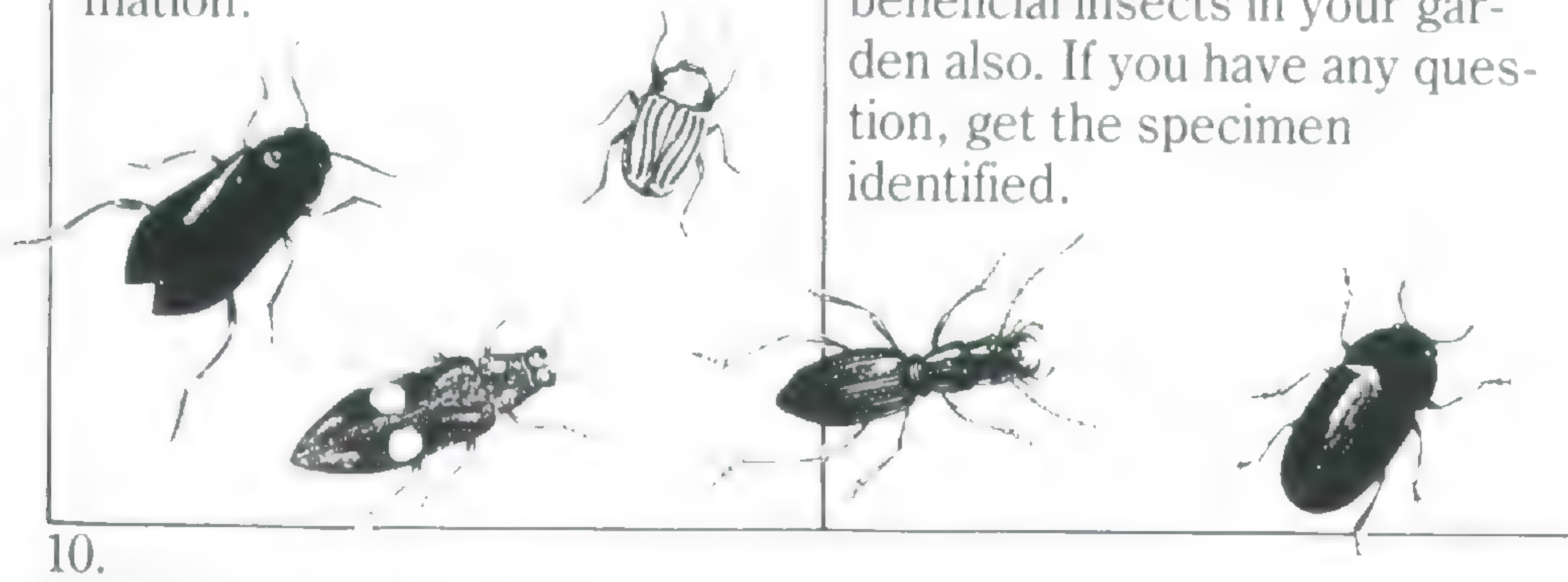
Integrated Pest Management

As we enter the growing season, it's a good time to talk about pest management. ''Integrated Pest Management,'' or IPM, is the ecological approach to pest control, utilizing a variety of natural and man-made strategies to favor plants instead of pests. IPM excludes the *routine application* of pesticides but recognizes that pesticides play a role, typically as emergency treatments when other strategies fail to keep pest populations below a damaging threshold. IPM is a common sense, socially responsible approach to pest control which minimizes the impact on beneficial insects, wildlife, humans and the environment.

PREVENTION AND PLANNING

IPM begins with prevention. Healthy plants will always be more resistant to pests and diseases, and plants can only be healthy in the right soil and site conditions. More than 90 percent of problems with pests and diseases can be traced to plants weakened and stressed by poor growing conditions. Treating the pest infestation or disease does not solve the underlying causes: poor soil, bad drainage, or inadequate light. (For tips on planning your garden and improving the soil, see the *Bulletin*, March-April 1990.)

You can also head off potential problems by choosing plants that are disease and pest-resistant. There is good information available on disease resistance in vegetables and fruit crops; information on landscape plants and insect resistance in general is much harder to come by. Sharing knowledge and experience with other gardeners in your locale is a good source of information.



If you grow highly susceptible plants, be prepared to battle insects and diseases with pesticides. Cabbages, eggplants, cucumbers, squash and cauliflower have more problems than lettuce, peas, beets, radishes and spinach. Likewise, apples, peaches and pears have more problems than strawberries, blackberries, raspberries and cherries. Similarly, select tulip tree, scarlet oak, ginkgo, amur cork tree, Norway, sugar and red maple over elm, green ash, white birch, silver maple and box elder. Aesthetic qualities and spatial relations also influence choice of plants for the landscape.

DIAGNOSING PLANT PROBLEMS

Correct identification of plant problems is central to IPM. Misdiagnosis frequently leads to inappropriate and excessive use of pesticides. Identify the problem before you initiate a control measure. Careful periodic observations are helpful. Some symptoms are obviously related to insect feeding or egg laying by the distinct visible damage. If your timing is good, you can confirm your suspicions by catching the culprit in action. Examine your plants in the early morning or after sundown when air temperatures are much cooler and plants are more succulent. Keep in mind that there are beneficial insects in your garden also. If you have any question, get the specimen identified.

Some problems are not so easily diagnosed. For instance, gradual leaf yellowing could be a symptom of numerous disorders, and you may need some help to track down the cause. The Plant Clinics held at the Garden the first and third Mondays of the month from 9 a.m. to 12 noon throughout the summer are very worthwhile.

Get to know pests and diseases and how they operate. Only then can you evaluate the need for control and the timing of the control measures.

SANITATION AND ROTATION

These IPM techniques are often overlooked. In our homes, we can all remove food sources that attract ants, house flies, cock roaches and the like. Sanitation also works in the garden to reduce insect and disease populations.

Pests and diseases commonly remain in plant debris as a place of protection or nutritional support over the winter. It is quite convenient for the pest or disease to remain close to the host plant for the next season to initiate the cycle again. For example, apple maggots and codling moths spend the winter in dropped apples, and mature cones of Austrian and Scotch Pine that have dropped to the ground contain infective fungal spores of Diploidia tip blight. By removing the infested debris, you break the pest's life cycle and reduce the chance of reinfestation.

Yearly rotation of crops in the vegetable garden and bedding areas where annuals are planted is a sound IPM practice. While sanitation will reduce the pest population, it is not always possible to remove infested plant material completely. Another way to avoid recurring problems is to alternate the crops. The success of crop rotation capitalizes on the fact that pests and diseases in particular tend to be rather specific in host preference. For example, the fungi that cause leafspot diseases on tomatoes do not cause the same problems on carrots or peas. Several years of growing tomatoes in the same spot will promote a recurrent leaf spot epidemic unless you plant a different crop to break the cycle. Other strategies are necessary for woody and herbaceous perennials.

BIOLOGICAL CONTROL

Fortunately, pest populations are controlled by predators and diseases or we would be overwhelmed with insects. Pests' natural enemies present our best defense against infestation, and protecting beneficial insects in our gardens is one of the keys to successful IPM. Application of broad spectrum pesticides does not distinguish between beneficial and destructive insects.

Most gardeners are familiar with the aphid-feeding lady bird beetles. Other predators include: lace-wing larvae, ground beetles, spiders, predaceous mites and thrips, parasitic wasps and flies. Another useful weapon is the BT insecticide used to control caterpillars, webworms, bagworms, and armyworms. This product is composed of bacterial spores which, when ingested, paralyze the pest. It may take several days to see the effects of BT insecticide and good coverage is essential, but it is safe and non-toxic to people. Other strains of this bacterium are being developed with different pest specificity.

PHYSICAL REMOVAL

This technique is the oldest method of insect control and limited to those pests of good size. It could be thought of as a method of sanitation except that you remove the pest instead of the infested host. It works well for insects such as the tomato and tobacco hornworms and others that have a sedentary stage, including bagworms, tent caterpillars and fall webworms.

TRAPPING

An interesting and creative method of avoiding insect problems is to trap them away from the host plant. Stimuli such as light, sound, odor, taste and other plants will attract certain insects. Trapping can be as simple as placing sticky coatings on boards and strategically laying them on the soil around the garden or flower bed. This is particularly helpful for monitoring the presence and absence of pests. However, it is probably not a realistic way to control the population. Sticky traps are commercially available and can be used for monitoring aphids, whiteflies, and thrips as well as squash bugs, cucumber beetles, and corn rootworms.

Chemical attractants have been developed for use in commercial fruit production to monitor insect populations. They are mixed with contact insecticides or incorporated into sticky traps. Protection from codling moth, leaf rollers, and peach tree borers can be achieved with one trap in the home fruit garden.

PESTICIDES

Despite careful planning, occasionally it seems that the only way to gain control of a pest problem is to use a pesticide. For the homeowner, however, this should be a last resort. Controlling insects usually is a clear-cut decision. Diseases, on the other hand, present a much more difficult situation. Once infection has taken place, most pesticides available to the homeowner will not eradicate the disease. Most disease controlling pesticides are used as protectants, providing a barrier against initial infection. This means that you must anticipate the disease and use a fungicide prior to discovering the problem. For this reason, much more emphasis in disease control IPM has been placed upon breeding for resistant varieties and using sanitation techniques. Ultimately, this may reduce or eliminate the need for pesticides.

Fortunately, the pesticides used for disease control are much less toxic to humans and other wildlife. Insecticides can present a much greater health risk and the homeowner should resist relying on this apparent "quick fix." When the benefit/risk ratio is in favor of using a pesticide, chose the least toxic, most selective one for the pest, and one with the widest margin of safety for you.

Biological insecticides whose active ingredient originates from plants are relatively safe and break down to non-toxic products relatively soon after application. These products include rotenone (used to control aphids, whiteflies, webworms and many beetle pests), pyrethrum (particularly effective as a "knockdown" for flying insects) and ryania (for use against chewing insects). Horticultural oils and insecticidal soaps are excellent choices for use in an IPM program against a wide variety of insects and mites. During the last ten years, many refinements have made these products usable over a longer season, predictable in effectiveness and less toxic to plants. Finally, considerable effort is going into developing microbial insecticides like BT and, more recently, entomogenous nematodes for the control of Japanese beetles.

A FINAL WORD

A good deal of energy each season goes into managing pest problems in the garden and landscape. Take the time to observe your plants, know the pests and beneficial agents, and select your controls wisely.

—Steven D. Cline, Ph.D.

IPM Comes to the Garden

As part of the Garden's implementation of integrated pest management techniques, four kinds of beneficial insects were released in the research greenhouses on March 22, 1990. The insects were whitefly parasites, *Encarsia formosa*; spider mite predator, *Phytoseiulus persimilis*; soft bodied insect predator, *Chrysopa carnea*; and aphid predator, *Hippodamia convergens*. Many commercial greenhouses are using this method of insect control with excellent results.

The two main goals of the Garden's IPM program are to control damaging insects, many of which have become resistant to pesticides, and to reduce health hazards associated with pesticide use.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Saturday, 9 a.m. to noon, at **577-5143.**

May Tips

- Set out seedlings of warm season vegetables such as tomatoes, peppers, eggplants by mid-month.
- Houseplants can be moved outdoors for the summer once night temperatures stay above 50 F. Where practical, set pots into the ground to keep roots cool and reduce watering needs.
- Thin out some shoots of perennials such as bee balm and phlox to allow greater air circulation.
- Fertilize zoysia lawns early in the month. Apply 10 to 20 pounds of a 10-6-4 or similar formulation per 1000 square feet. Mow zoysia often enough to maintain at a height from ¾ to one inch.
- Cool season grasses such as bluegrass and fescue should be cut at two to three inches high now.
- Observe and evaluate azalea and rhododendron varieties that overwintered well for possible inclusion in your home garden. On your own plants, remove spent blooms as flowers fade. Fertilize with cottonseed meal or an acid greening formulation, following label directions.

June Tips

- Continue succession sowings of warm season vegetables as space allows.
- Start seedlings of broccoli, cabbage, and cauliflower plants near the end of the month. These will be transplanted to the garden in six to eight weeks to provide for fall harvests.
- If overhead irrigation systems are used, water early enough in the day to allow foliage to dry before nightfall.
- During hot weather, raise mower height to three or four inches for cool season lawn grasses. Shorter mowing may stress lawns and cause them to deteriorate.

—Chip Tynan, The Answer Service

Missouri Botanical Garden
CALENDAR OF EVENTS
May-June 1990

MAY 18 / MEMBERS' DAY
Purple Martin Evening

6:30 p.m., Shoenberg Auditorium and grounds. It's a tradition! Welcome these popular birds back with a lecture, film, and slide show in the Auditorium, followed by a stroll through the Garden's purple martin neighborhood. Led for the 9th year by W. Ashley Gray III. There will be a drawing for a purple martin house. Cash bar; no reservations required. Free. Limited seating.

MAY

1-13 TUESDAY-SUNDAY

Carolyn Crawford Exhibit

9 a.m. to 5 p.m. daily, Ridgway Center, Exhibit continues. Botanical illustrations by Carolyn Crawford, a distinguished artist. Free with regular Garden admission.

5 SATURDAY

11th Annual St. Louis Storytelling Festival

1 p.m., Shoenberg Auditorium. "Storytelling: The Magic Gift," an annual event, is sponsored by University of Missouri-St. Louis. In addition to activities held at the Jefferson National Expansion Memorial (the Arch), the Garden will host storytellers Patrick Ball and Perrin Stifel. Free with regular Garden admission.

6 SUNDAY

Iris Society Show

Noon to 5 p.m., Orthwein Floral Display Hall. View a magnificent and colorful display. Free with regular Garden admission.

7 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. Free, expert advice from Master Gardeners on gardening problems and questions. Regular Garden admission.

11 FRIDAY

Book Signing: "How to Grow Herbs In The Midwest"

11 a.m. to 3 p.m., Garden Gate Shop. Come meet Mary Gamble, editor of this invaluable new guide by the St. Louis Herb Society. Regular Garden admission.

12-13 SATURDAY-SUNDAY

Bonsai Society Show

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m. Sunday, Orthwein Floral Display Hall. A display of fascinating Japanese art form. Members of the Bonsai Society of Greater St. Louis will be on hand to answer questions. Free with regular Garden admission.

19-20 SATURDAY SUNDAY

Horticulture Society Show

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m. Sunday, Orthwein Floral Display Hall. A juried show and display of vegetables and flowers. Free with regular Garden admission.

Dahlia Society Sale

Noon to 5 p.m. Saturday, 9 a m. to 5 p.m. Sunday, Ridgway Center. Annual display and sale of these popular, colorful flowering plants by the Greater St. Louis Dahlia Society. Regular Garden admission.

20-26 SUNDA SATURD

Pacific Rim Festival and Trade Fair

9 a.m. to 5 p.m. daily, Ridgway Center. Activities in conjunctio with 20th World Trade Week Celebration, coordinated by the St. Louis Center for Internatio Relations. Learn about Japan, China, Korea, Thailand, Taiwa and Indonesia through floral an photo exhibits, lectures, and shadow puppet displays. Other activities will be hosted by the St. Louis Art Museum, St. Lou History Museum, and St. Louis Zoo. Call 454-1744 for more information.

21 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Cente See May 7 for details.

MAY 25 / Rose Evening

5:30 to 8:30 p.m., grounds. Don't miss this very special Members' evening, featuring our beautiful rose gardens. Garde Horticulture staff will answer questions on rose care. Other delights include music, a free rose care brochure, film on the growing and care of roses, and an optional buffet supper. Watch your mail for more information. For members only.

Y 28 / MEMORIAL DAY   Summer Hours Begin

e Garden will be open daily from 9 a.m. to 8 p.m. through Labor Day, September 3. Enjoy a
oll about the grounds during the peaceful evening twilight.

26-27 SATURDAY-SUNDAY

Rose Society Show

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m. Sunday, Ridgway Center. A lavish display of everyone's favorite flower. Free with regular Garden admission.

WALKING TOURS
Now All Tours Begin at 1:00 p.m.

Join us every Tuesday, Saturday and Sunday at 1:00 p.m. for a tour led by Garden Guides. Come enjoy the beauty of springtime and learn about architecture, history, sculpture and horticulture at the Garden. Meet at the Ridgway Center ticket counter. Free with regular Garden admission.

JUNE

SATURDAY

ociety Show
to 5 p.m., Ridgway Center.
lay 6 for details.

MONDAY

Clinic
. to noon, Ridgway Center.
lay 7 for details.

WEDNESDAY

In June
.m., Cohen Amphitheater.
of a series of four Wednesday
ng concerts featuring local jazz
lues musicians. Tonight:
lla Bass and the David Hines
mble. Lawn seating; blankets
wn chairs are encouraged.
ssion is $2 per person.

WEDNESDAY

In June
p.m., Cohen Amphitheater,
ring Tayammum Falah Quartet
Willie Atkins. See June 6 for
ls.

16-17 SATURDAY-SUNDAY

Lily Society Show

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m., Ridgway Center. Annual show sponsored by Mid-America Regional Lily Society (MARLS). A colorful display, free with regular Garden admission.

18 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See May 7 for details.

20 WEDNESDAY

Jazz In June

7:30 p.m., Cohen Amphitheater. Performers to be announced. See June 6 for details.

24 SUNDAY

Daylily Society Show

9 a.m. to 5 p.m., Orthwein Floral Display Hall. Regular Garden admission.

27 WEDNESDAY

Jazz In June

7:30 p.m., Cohen Amphitheater. Performers to be announced. See June 6 for details.

JUNE 3 / SUNDAY
World Environment Day

Noon to 5 p.m., Ridgway Center and grounds. Third annual observance co-sponsored by the Greater St. Louis Chapter of the United Nations Association and the Garden focuses on environmental issues facing our planet. "Interdependence: The Environmental Web" features exhibits, dancers, booths, food, contests, music, parades, lectures, and awards. Come learn about recycling, acid rain, UNICEF, world population, and more. Free with regular Garden admission.

JUNE 21 / MEMBERS' DAY
Japanese Garden Tour

1 to 4 p.m., Japanese Garden. Enjoy the beauty of Seiwa-En, with special guided tours for members only. Watch your mail for more details. Free.

From the Membership Office

MEMBERS' TRAVEL PROGRAM

Japan

AUGUST 6-20, 1990

The International Garden and Greenery Exposition is a highlight of the Garden's tour to Japan this summer. Led by Kikue Shirasaki Atkins, owner of Travellers' Choice Travel Agency in St. Louis, the trip will feature:

- Suwa, St. Louis' Sister City
- Nagano City, capital of Missouri's Sister State
- The renowned bonsai collection of Kenichi Oguchi in Okaya
- The famous garden park of Kenroku Koen in Kanazawa
- The magnificent gardens of Kyoto
- Chinzanso Garden in Tokyo
- International Garden and Greenery Exposition in Osaka.

Cost of the tour of Japan is $3,425, which includes a $200 donation to the Garden. Optional tours to Hong Kong and Bangkok are available for an additional fee.

Australia, New Zealand, and the South Pacific

AUGUST 25 – SEPTEMBER 11, 1990

The 13th World Orchid Conference in Auckland is the finale of this exciting Garden trip to the land "down under." Visit Sydney, Canberra, Melbourne, and Hobart in Australia, and Christchurch, Mt. Cook, Queenstown, Rotorua, and Auckland in New Zealand. Led by Garden members Jane and Whitney Harris, the tour includes:

- The Royal Sydney Botanical Garden, Sister Garden to Missouri Botanical Garden
- Meetings with Orchid Club members in Sydney
- Dinner with local families in Christchurch
- Queenstown Botanical Garden
- Cruise of Milford Sound fjord region in New Zealand
- Dinner in Rotorua with authentic Maori tribal dance program
- World Orchid Conference in Auckland.

Tour cost is $4,770 from St. Louis, which includes a $200 donation to the Garden. Optional stopover packages will be available for Tahiti, Fiji, and Hawaii, at additional cost.

For more information on 1990 Members' Tours, please call the Membership Office at the Garden, 577-9500, or Travellers' Choice, 645-5600.

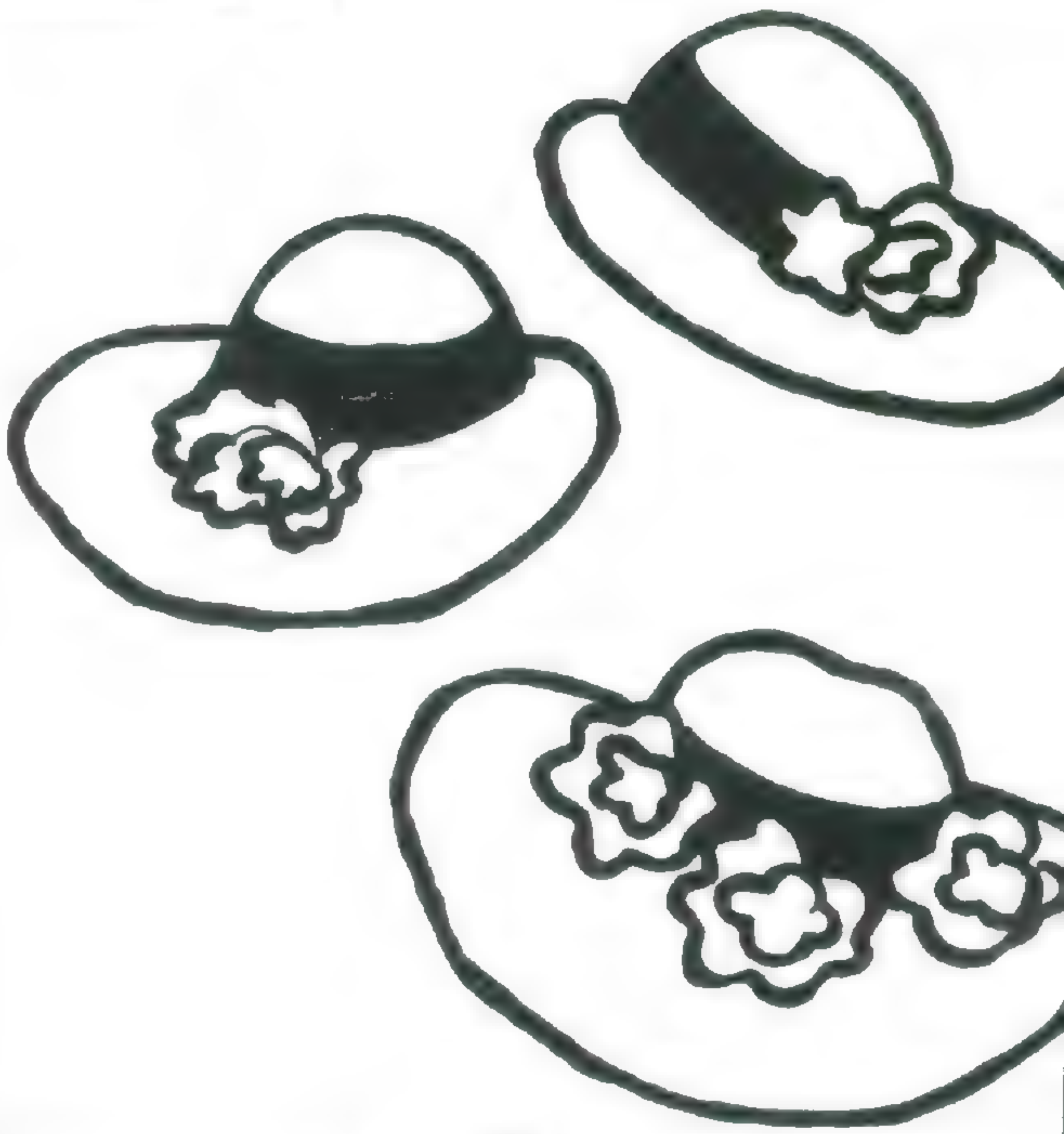
NEWS FROM TOWER GROVE HOUSE

Auxiliary Elects New Officers

At the monthly meeting February 6, 1990, Tower Grove House Auxiliary elected the following officers: Virginia Blume, president; Eva Holobeck, vice president; Anita Siegmund, treasurer; and Norma Silber, recording secretary.

Slide Program Available

The Auxiliary has prepared a 30-minute slide presentation on the history of the Garden and Tower Grove House titled "Henry Shaw, His Home, His Garden." The program features color slides and narration, and can be presented to local groups and organizations. For information on fees and reservations, please call 577-5150.



Famous-Barr Tips Its Hat to Mothers

"Hats Off to You!" is the theme of the Garden's luncheon in honor of Mother's Day, sponsored by Famous-Barr Company. Held on Friday, May 11, 1990, this "Pre-Mother's Day" luncheon will feature attendance drawings, spring and summer fashions by Famous-Barr, and a festive luncheon served under the outdoor party tent at the Ridgway Center. A special visit by Fred Hayman of Beverly Hills will include gifts of his new "273" fragrance.

Reservations are $35 per person for members and $45 per person for nonmembers. Reservation deadline is May 8. See the invitation mailed recently to all members, or call 577-9500.

Make Your "Bed and Breakfast" Reservations Today!

Members have just until May 11 to make reservations for the 1990 "Bed and Breakfast" event at the Garden. For a $35 donation, you can help sponsor one year's care of a selected planting "bed" in the newly renovated Climatron. To thank you for your help, you will receive:

- A complimentary tropical buffet breakfast for you and one guest on either of two dates—Wednesday, May 16 or Saturday, May 19 — AND,

- An attractive personalized certificate declaring your support for the Orchids, Cycads, African Violets, Begonias, or Palms!

See the brochure mailed in March to all members or call 577-5118 to make your reservation today!

IN MEMORIAM / *John H. Poelker*

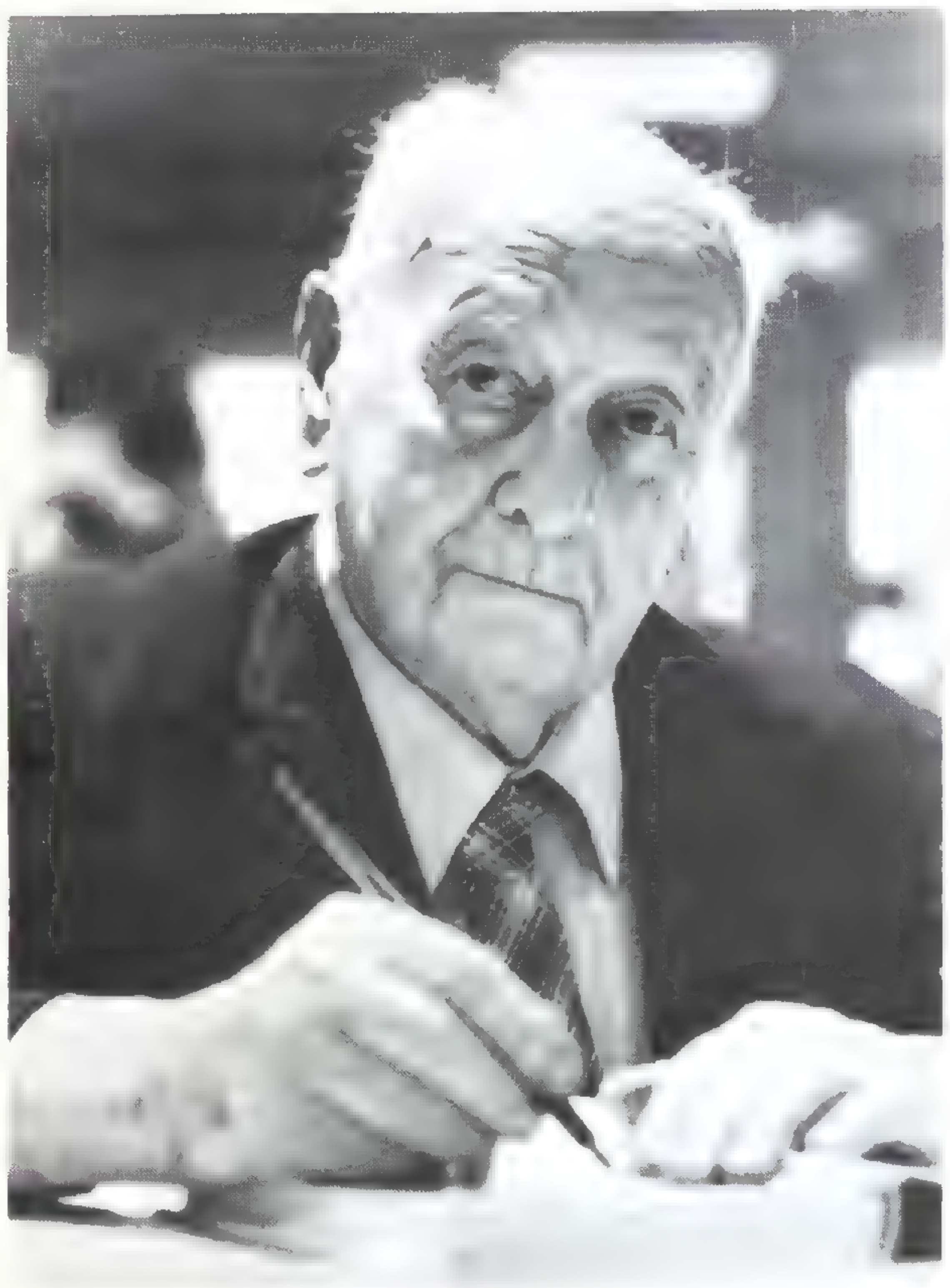
Former Mayor of St. Louis John H. Poelker died Friday, February 9, 1990, and the Garden lost a longtime friend.

Mr. Poelker was a dedicated public servant, known for his lifelong commitment to St. Louis and its institutions. His tireless efforts benefited the city's growth and economic development.

In 1953, Poelker became the city's youngest assessor. He served as St. Louis's controller from 1957 to 1973, and as mayor from 1973 to 1977. During his term as Mayor of St. Louis, Mr. Poelker was a Garden Trustee by virtue of his office. In 1986, he was appointed a commissioner of the Botanical Garden Subdistrict, a position he filled until his death.

Mr. Poelker is widely remembered with affection and respect. St. Louis, and the Garden, are richer for his unselfish contributions.

From the Garden Gate Shop



Edgar Denison

Missouri Wildflowers: New Edition

On Saturday, March 24, Edgar Denison was on hand in the Shop to autograph copies of the latest edition of his famous field guide, *Missouri Wildflowers*. First published by the Missouri Department of Conservation in 1962, this fourth edition has been revised and expanded to feature 17 additional species, 45 new photographs, additional drawings, and simplified identification keys.

A native of Germany, Mr. Denison emigrated to the U.S. in 1927. He is a renowned gardener and photographer as well as an expert on the region's native flowering plants, and he has led popular spring "wildflower walks" at Shaw Arboretum for many years. Mr. Denison is a committed advocate of conservation policies, reminding us not to pick or dig wildflowers, and to work to protect their natural habitats.

Missouri Wildflowers is available in paperback for $8.50, or hardcover for $11.50. Mr. Denison has donated the book to the Missouri Department of Conservation.

Book Signing May 11

Mary Gamble, a longtime friend of the Garden, will be signing copies of *How To Grow Herbs in the Midwest*, published by the St. Louis Herb Society, in the Shop on Friday, May 11, from 11 a.m. to 3 p.m. This new 32-page book, edited by Mrs. Gamble, features photographs by Patricia Leigh and drawings by Barbara Ottolini. It is a comprehensive guide to the identification, history, uses, propagation, culture, and harvesting of herbs. The book is available in paperback for $3.50.

Gifts for Mother's Day and Father's Day

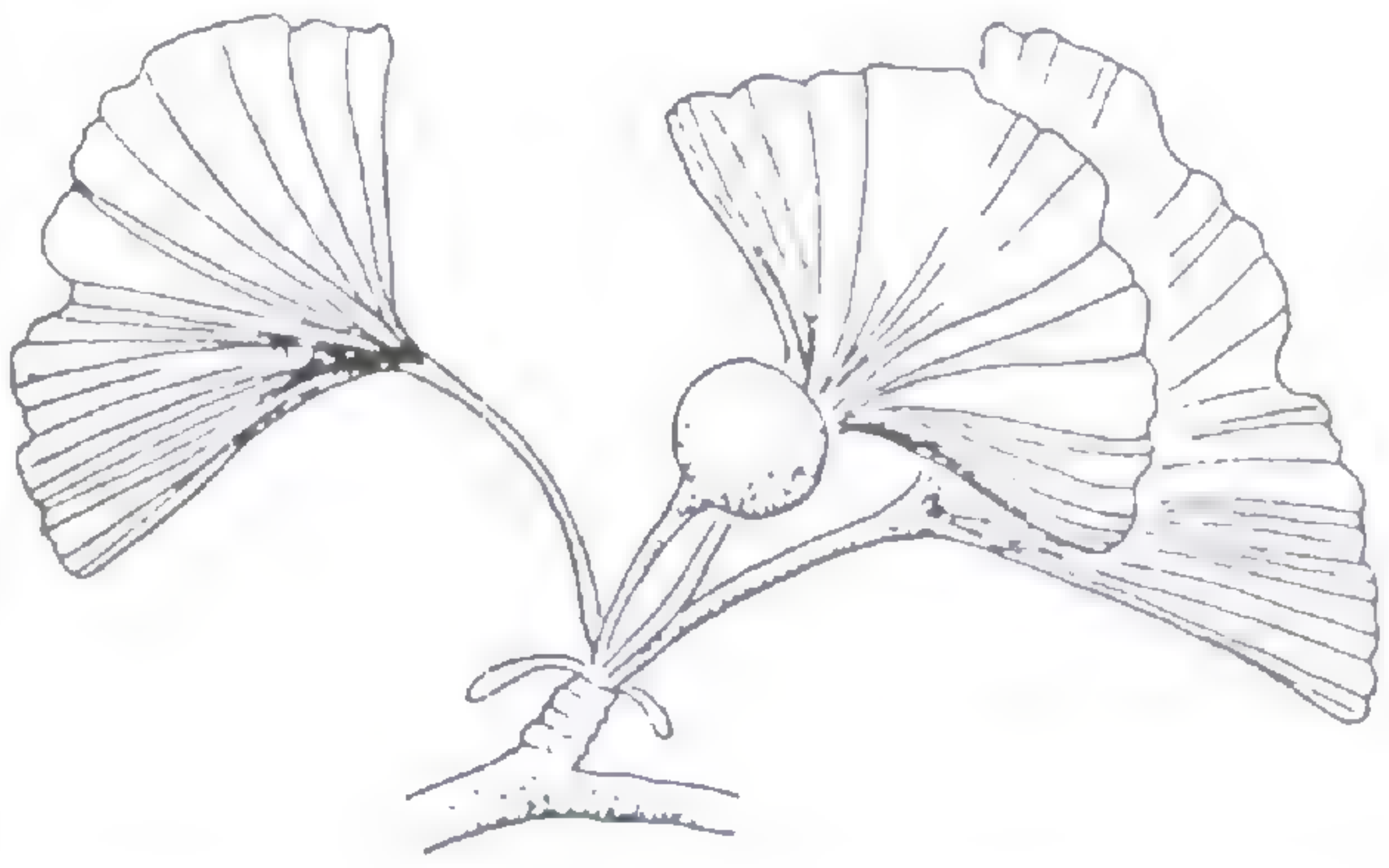
Stumped by what to give for Mother's Day, May 13, and Father's Day, June 17? The Garden Gate Shop has a wonderful assortment of lovely and unusual gifts for every mom and dad. The Shop has a colorful array of beautiful plants for the house and yard, a superb selection of gardening tools and accessories, and the finest collection of gardening books in town.

Margaret Mee Prints

A collection of full color prints of paintings by the distinguished botanical illustrator Margaret Mee is now available in the Shop. The large, unframed prints feature exquisite renderings of botanical subjects from the Amazonian forests, and sell for $125 or $175. A complete set of eight is $1100.

Jack Jennings Prints Available

A very special collection of color photographs by Jack Jennings is now available for purchase in the Shop. Mr. Jennings, the photographer for the Garden's annual calendar, has made available 12 of his magnificent pictures of Garden scenes. The prints are signed and mounted and are treated to resist fading even in direct sunlight. The prints are $70 and $100, unframed. These splendid pictures will be treasured by anyone who loves the Garden.



A New Guide to Trees

Know Our Trees, a lavishly illustrated guide to the trees of the Missouri Botanical Garden, will be available in the Shop in mid-May. Published by the Garden, this 48-page book was made possible by a generous gift from Geraldine Epp Smith. The book was written by the Garden's former horticultural taxonomist, Dr. George Rogers, who is now director of the Cox Arboretum in Dayton, Ohio. Garden volunteers Arden Fisher and Joan Murphy provided invaluable editorial assistance.

Know Our Trees serves as a field guide to the trees on the Garden's grounds and contains abundant information on the 27 species featured. It is available in paperback for $2.50 and is printed on recycled paper.

An Investment In the Future

Helping institutions in tropical countries builds trust at a time when our global survival depends on it.

Many Garden members are aware of the substantial funds the Garden receives in grants for its research program. Yet few are aware that those funds do not, for the most part, cover costs for staff and facilities here in St. Louis. The funds frequently are earmarked by the granting foundations to help support scientists and research institutions in other countries.

Of what benefit is this to the Garden? The benefits are enormous.

Missouri Botanical Garden has become a leader in the world environmental crisis through its long-standing, major commitment to botanical research in the tropics. This research cannot be carried out effectively without the assistance of the scientists in those countries, nor should it be. But often the facilities at research institutions in tropical countries are inadequate; trained botanists are few; and local knowledge of how to gain support from the world community is lacking.

International Cooperation

The Garden, with its international influence and expertise, is in a unique position to assist its colleagues in strengthening their institutions. The rewards to both parties, and to science, are incalculable.

With improved training and facilities, local scientists can provide Garden researchers with vast amounts of information and help to analyze and utilize that information in more useful ways. The Garden has 40 Ph.D.-level scientists pursuing research around the world; working with local colleagues extends the scope of that network dramatically.

Just as important, the goodwill generated by this interaction benefits both parties. Working together, scientists from the Garden and other countries can make a real difference in the quest for knowledge and for solutions to the pressing problems facing tropical countries.

The Garden's involvement with foundations committed to global environmental concerns helps to attract grants in this country, and its history of trust and collaboration assists in expediting the use of those grants in other countries. The result is increased scientific knowledge, and even stronger working relationships among institutions in tropical countries, the foundations, and the Garden.

Building Institutions

The Garden encourages research in the tropics in many ways. The debt-swap program in Ecuador (see the *Bulletin*, July-August 1989); the Latin American Plant Sciences Network (*Bulletin*, May-June 1989); and postgraduate training for Latin American scientists (*Bulletin*, November-December 1989). For these and several other programs, the Garden acts as administrator or facilitator.

Building institutions in developing countries can involve activities as basic as constructing a roof or installing doors and lights in a research building. Some scientists lack necessary equipment, such as typewriters, filing cabinets, microscopes, or herbarium cases. Air conditioning may seem like a luxury, but without it precious specimens are lost. The Garden assists local institutions in setting priorities, and helps to achieve them.

Other activities are more complex. Collaborative research projects are undertaken. Local training courses for students are enriched. Opportunities are provided for study in the U.S., at the Garden, and at other institutions as well.

Providing opportunities for study in the U.S. offers substantial long-term benefits. Students feel less isolated. By seeing and understanding how research is accomplished at the Garden, their ability to collaborate in the future is increased. They achieve a broader understanding of the significance of their studies, and many students come to grasp for the first time the wider implications of their work. One recent post-graduate visitor published an extraordinary eleven papers during his six-month visit; another became interested in conservation efforts for the first time.

MacArthur Foundation Provides Grant

All of these institution-building activities support and make possible the Gardens direct research efforts in conservation, exploration and collecting. A recent grant to the Garden from the John D. and Catherine T. MacArthur Foundation illustrates this. Of the funds received, $195,000 is earmarked for improving research facilities in Latin America and $630,000 will support plant inventories and research at three sites in the Amazonian region of the Andes. The funds will support salaries for local scientists and a coordinator from the Garden, and will assist local students in their field work. While the MacArthur grant is shared with institutions and scientists in other countries, the knowledge from these studies enriches us all.

A Global Imperative

These efforts are a remarkably cost-effective way to fulfill the Garden's mission for research. Just as important, they help to build cooperation and trust among people and nations at a time when our global survival depends on that cooperation.

The Garden today is in a position of leadership in the current environmental crisis, and in building the international trust that will help to solve it.

PROFILE

RODOLFO DIRZO

Visiting Scientist

Noted Mexican ecologist Dr. Rodolfo Dirzo is working at the Garden as a visiting scientist, on sabbatical leave from the National University of Mexico where he is a researcher and professor in plant ecology.

The bulk of Dirzo's work lies in plant/animal interactions. At the Garden he is preparing papers on the importance of animals for conservation of tropical forests. He is exploring the effects on the ecosystem of removing the animals for food, pelts, or pets.

Dirzo has discovered that the relationship between plants and animals is indeed complex. Not only do animals depend on plants—either directly or indirectly—for sustenance, but plants depend on animals as well. Birds, insects, and other creatures pollinate and spread the seeds of plants, thereby spreading plants geographically and contributing to plant diversity. Without animals, pollination and seed dispersal are impossible for many plants.

Certain plants have also evolved in response to specific animals, Dirzo points out. When those animals are removed, the plants are endangered. Needless to say, when the plants are removed, as they are when a forest is cleared for cattle grazing, the animals' habitats are destroyed and the animals are endangered.

Plant/animal interaction is important to humans as well, Dirzo explains. Plants develop toxic chemicals to prevent damage from animals. These chemicals can be very important to humans and their potential is still being explored.

Dirzo began his career by studying Mexican tropical dry forests. When he attended the University of Wales he began to study the ecology of plant/animal interactions. After receiving his masters and Ph.D. degrees at the University of Wales, he returned to Mexico and to pursue research in the Mexican tropical rain forests.

For two years Dirzo was the director of a large biological station in Los Tuxtlas, Mexico. There he began to study the relationship of conservation to plant/animal interactions.

On his sabbatical leave from the National University of Mexico, Dirzo is spending nine months here at the Garden, where he is using the library to analyze data and taking advantage of the opportunity to confer with the Garden's research scientists. In addition to his papers on conservation and animals, he is preparing papers on current rates of deforestation.

Dirzo has been a frequent lecturer since his stay in St. Louis began last December. He considers environmental education to be of extreme importance and writes popular papers as well as scientific ones.

In August, he will finish his sabbatical leave with three months at a biological station in Seville, Spain.

THIS SPRING AT SHAW ARBORETUM

Prairie Plant Sale

The native plants of Missouri's prairies are long-lived perennials that are very hardy and drought tolerant. Many species have beautiful flowers or interesting foliage with a great variety of textures, shapes, and colors.

To acquaint gardeners with these interesting plants, a selection of 17 species of wildflowers and three species of prairie grasses suitable for perennial beds or small prairie gardens will be offered for sale on three consecutive Saturdays - May 19 and 26, and June 2 from 10:00 a.m. to 3:00 p.m.

The plants will be sold at the Arboretum greenhouse located just inside the staff entrance ¼ mile west of the main entrance.

For more information call 577-5138 or 742-2217.

Gift Planning

Free Book on Wills

There is an old saying that if you want to make sure something is done right, do it yourself. That certainly holds true with estate planning. If you don't plan for your family's welfare, nobody else can do it for you. The most efficient way to plan ahead is with a valid Will.

If you die without a Will, the laws of the state will determine who cares for your children and how your assets are distributed. With a Will, you're in charge.

To make preparing your Will as simple as possible, we are pleased to offer a booklet, "Gathering Information for Your Will." This excellent publication not only tells you what information your attorney will need for your first meeting, but also provides you with the space to list it. This booklet is recommended for anyone who does not have a Will or anyone who is considering revising one. To receive your free copy call Ernestina Short at 577-9532 or write to her at P.O. Box 299, St. Louis, MO 63166-0299.

New Heckman Gardens Dedicated

The new Margaret C. and William G. Heckman Bulb Garden and the enlargement of the Audrey Heckman Rock Garden were dedicated in late April. Visit these lovely Garden areas throughout the summer and autumn to enjoy an array of colorful blooms.

HENRY SHAW ACADEMY NEWS

Explorer Program Seeks Qualified Students

The Henry Shaw Academy Explorer program is accepting applications from now through August for the 1990-91 school year.

The field study program is for students 14-18 years old who have a background in general science or biology and want a greater challenge in science, other academic disciplines, and leadership. Field research methods and techniques are taught and used to study the diversity of the earth's ecosystems. Through monthly weekend field trips, students study prairies, caves, rivers, swamps, mountain zonation, reestablished wolf populations, ridge and glade habitats and Caribbean environments.

The program offers a full year's credit in high school elective biology to students who attend the monthly field sessions and satisfactorily complete independent projects and journals. Students who demonstrate outstanding skills in leadership and field research methods are eligible for a summer field trip to the tropics. Scholarship aid is available to those who are qualified.

The program runs from September through June. Thirteen Explorer openings are available. Interested students or parents should contact the Garden education division now for an application. Call Jeff De Pew, coordinator of the Henry Shaw Academy, at 577-5135.

Summer Science Camp Begins in June

Opportunities to study rivers, forests, ponds, creeks, natural communities, water lilies, and patterns in nature, to make artforms from the earth and to be an ''earthkeeper''...the Summer Science Camp offers many diverse and exciting ways for students 7-13 years old to explore and study the world around them. See the 1990 Summer Courses brochure, recently mailed to all members, for classes, programs, dates and times, or call 577-5140.

Recycling at the Garden

In addition to its long-standing efforts to use recycled printing papers and eliminate plastic containers in the restaurant, the Garden has initiated a program to recycle much of its paper waste, including computer paper, file folders and photocopies. Watch for the story in the upcoming July *Bulletin*!

Garden Guides Seek New Volunteers

If you love the Garden and love people, the Garden Guides have an exciting opportunity for you.

For more than 20 years the men and women of the Garden Guides have been educating visitors about the horticulture, ecology, history, architecture, design and sculpture of the Garden. Guides receive extensive free training, and work with all age groups, from preschoolers to senior citizens.

Becoming a Garden Guide requires commitment to regular service one day a week, helping at special events, and attendance at periodic enrichment training sessions. A new group will begin class in September. The class will meet one day a week for at least 8 weeks. If you are interested in becoming a Garden Guide, please call Jeanne McGilligan at 577-5187.

Experienced Gardeners Needed for Master Gardener Program

The Garden and Missouri Extension Service are looking for experienced gardeners to participate in the Master Gardener volunteer program. Master Gardeners are trained to participate in gardening education programs that include diagnosing gardening problems at public Plant Clinics, giving lectures on gardening, and organizing ''growing'' experiences for area school children and older adults. If you are an experienced gardener who can volunteer at least one day a week on a regular basis and desire to help others improve their gardening skills, you may have what it takes to be a Master Gardener.

For further information or to receive an application form, write or call Missouri Botanical Garden at 577-5140. Training will begin in October of 1990 and will run for fifteen weeks. The deadline for applications is Friday, June 22, 1990. Selected applicants will be interviewed. Space is limited and selection is competitive.

Trustee Profiles

JULES D. CAMPBELL

Jules D. Campbell, recently appointed Emeritus Trustee, has maintained a lifelong interest in the Garden. As a young boy, he accompanied his grandfather, Jules Desloge, on visits to the Garden. Mr. Desloge, for whom Mr. Campbell was named, was an official of Boatmen's Bank who was one of three official witnesses of Henry Shaw's Will, which established the Garden in perpetuity.

Mr. Campbell became an *ex officio* Trustee of the Garden in 1970, in his capacity as President of the St. Louis Academy of Science. Under terms of Henry Shaw's Will, the president of the Academy and his successors serve on the Garden's Board by virtue of their position. A member of the Academy since 1945, Mr. Campbell has been interested in the role the Academy plays in educating and informing the public about science. Last December, after eighteen years as President of the local Academy and Garden Trustee, Mr. Campbell was succeeded by Thomas O. McNearney, Jr.

Throughout his years of service as a Garden Trustee, Mr. Campbell has been active on many vital committees, including Building and Grounds, Arboretum, and Henry Shaw Annual Giving Campaign. Today he continues to be active as a solicitor for the Capital Fund drive, the Annual Giving Campaign—personally contacting Garden members each fall for a second gift to the Garden, in addition to a membership—and serves on the Arboretum Committee. Mr. Campbell has a deep and ongoing interest in the Arboretum, advocating programs and special efforts to focus more attention on the wonderful resources available there.

When asked about his tenure as a Garden Trustee, Mr. Campbell was quick to mention the extraordinary growth and development that has taken place at the Garden since his first visits here as a child. He recalled the decision of the Board of Trustees in 1971 to engage Dr. Raven as director of the Garden, a decision he feels has resulted in the Garden's impressive progress.

A resident of St. Louis County, Mr. Campbell retired in 1959 as Chief Engineer of International Shoe Company.

Jack E. Thomas, Jr.

JACK E. THOMAS, JR.

Jack E. Thomas, Jr. was elected to a four-year term on the Garden's Board of Trustees during their annual meeting held January 24.

''The international reputation of the Garden has brought great distinction to St. Louis and I am honored to work with the Trustees and staff in furthering its important agenda. The Garden, one of the finest botanical institutions in the world, is a community asset of which we can all be proud,'' said Thomas.

A graduate with high distinction from Dartmouth College in 1974, Mr. Thomas received a Juris Doctorate degree from St. Louis University School of Law in 1978. In 1981, Mr. Thomas became associated with Coin Acceptors, Inc., a leading producer of coin handling equipment for the soft drink and vending industries and today Thomas serves as its President and Chairman of the Board.

Active in state, community and charitable organizations, Mr. Thomas serves on the Board of Directors of Neighborhood Association, Hawthorn Foundation, Coordinating Board for Higher Education, Camp Skullbones for Underprivileged Children, and St. Louis Zoo Friends Association. His professional affiliations include the St. Louis, Missouri and American Bar Associations, Young Presidents' Organization, and National Soft Drink Association.

Thomas resides in St. Louis County with his wife, Deborah.

TRUSTEES HONOR DR. AND MRS. RAVEN

In honor of Dr. Raven's recognition as Man of the Year by the *St. Louis Post-Dispatch* in January, the Garden's Board of Trustees adopted the following resolution at their meeting on February 21, 1990. The resolution was presented to Dr. and Mrs. Raven as a handsome proclamation lettered in calligraphy, and read:

''WHEREAS, Peter H. Raven and Tamra E. Raven have, with diligence, grace and enormous skill, directed the Missouri Botanical Garden since August 1, 1971;

''WHEREAS, on January 26, 1990, Peter H. Raven, Director of the Missouri Botanical Garden, was honored as the St. Louis Man of the Year;

''WHEREAS, Peter H. Raven has served our community with distinction in a multitude of capacities during the past eighteen and one-half years; and

''WHEREAS, Peter H. Raven is a world leader in the fight for a comprehensive policy to save the environment for all people and living things;

''NOW THEREFORE, BE IT RESOLVED by the Board of Trustees of the Missouri Botanical Garden that, in connection with the St. Louis Man of the Year Award, Peter H. Raven and Tamra E. Raven are hereby recognized for bringing honor to this institution, and for their excellence in leading the Missouri Botanical Garden to better serve the peoples of St. Louis, the State of Missouri, the United States of America and the planet Earth.''

Behind the Scenes

Mick Richardson

New Head of Graduate Studies Named

P. Mick Richardson has joined the Garden's research division as head of the Department of Graduate Studies, effective February 1, 1990. Dr. Richardson is a British citizen who received his Ph.D. in Plant Sciences from King's College, University of London, in 1979. He comes to St. Louis from The New York Botanical Garden, where he was administrator of Graduate Studies 1984-89, and Caspary Curator and director of Harding Laboratories, 1985-1990.

Dr. Richardson takes over management of the Garden's extensive program of graduate training in botany, which is conducted in cooperation with Washington University, St. Louis University, University of Missouri-St. Louis, and Southern Illinois University at Edwardsville. There are 24 students currently working at the Garden while pursuing advanced degrees. Richardson succeeds Dr. Peter Hoch, who will remain at the Garden while pursuing research full-time.

"Dr. Richardson is a distinguished addition to the staff and we are delighted to have him here in St. Louis," said Dr. Peter H. Raven, director of the Garden.

Richardson's research interests include biochemical systematics and taxonomic congruence. He is the author of numerous publications, and is at work on a book, *Toxic Weaponry of Plants*, for Yale University Press.

New Manager for Garden Gate Shop

Margery Telthorst has been named Retail Operations Manager for the Garden Gate Shop, effective February 26, 1990. A native of St. Louis, Ms. Telthorst grew up here and graduated from Principia College in Elsah, Illinois, in 1974.

Ms. Telthorst has worked in retailing and marketing throughout her career. From 1974 to 1982 she was a furniture buyer for Marshall Field & Company in Chicago, where her work included merchandising, display, and product development. Ms. Telthorst later worked as a furniture and gift buyer for Halls Merchandising in Kansas City and as an independent sales representative for several major furniture and accessory companies.

"I am delighted to be back in St. Louis and to be working at the Garden, which has always been one of my favorite places," Ms. Telthorst said. "I'm looking forward to working with our buyers to continue to find fresh and exciting new items for the Shop.

"But most of all, I am excited by the opportunity here at the Garden to develop and present merchandise from companies that practice environmental responsibility. We look forward to educating consumers about ways to cherish and protect our natural resources."

Margery Telthorst

Moving? Please Remember To Send Us Your New Address.

To avoid missing any of your membership mailings, you *must* give us your new address at least three weeks *before* you move. Please enclose the mailing label on the back cover of this *Bulletin*, and mail to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

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continued on next page

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THE THIRD ST. LOUIS

1990

Garden Tour

SUNDAY, JUNE 10, 1990

10 a.m. to 4:30 p.m.

Rain or Shine

Garden members are invited to visit some of the loveliest private gardens in St. Louis.

Members are also invited to the

Garden Tour Finale Party

SUNDAY, JUNE 10, 1990

5:30 to 8:30 p.m.

Come celebrate the conclusion of a very special day with a spectacular party on a private estate.

Watch the mail for your invitation, including tour costs, party fees, and registration information for this members-only event. Participation will be limited.

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
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On the cover: Visitors of all ages enjoy summertime beauty at the Garden.
—Photo by Richard Benkof

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The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $40 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

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Comment

A Spectacular Summer

Summer at the Garden this year has much to offer members. For the past several months, the National Geographic Society has been preparing a feature article on the Garden by Boyd Gibbons to appear in the August issue of the *National Geographic* magazine. Members who renew their membership during August at our volunteer Membership Services and Information Desk in the Ridgway Center will receive a free copy of the Magazine. We will also host an exhibit of Garden-related photographs by James P. Blair of the National Geographic staff in both July and September in Monsanto Hall.

The Fannie May/Coleman Foundation has graciously agreed to sponsor the 16th Annual Japanese Festival. "Seeing Japan," the theme for this year's activities, will highlight different aspects of the Japanese culture each day. The Trustees, Garden staff, and St. Louis community salute the Coleman Foundation and its president, Mrs. Jean Thorne, for their continued support of the Festival.

Construction for the Kemper Center for Home Gardening is well underway. The generous gifts from the William T. Kemper Foundation, the Monsanto Fund, Mr. and Mrs. Henry Hitchcock, Dr. and Mrs. Walter Moore, the James S. McDonnell Foundation, Mrs. James S. McDonnell, Jr., the Stanley Smith Horticultural Trust, the Spencer T. and Ann W. Olin Foundation, to mention a few of the largest supporters, have made it possible to move ahead with the construction phase for the pavilion, which will open a year from this Fall.

Members who enjoyed the demonstration vegetable garden that was on the construction site of the Center will be pleased to learn that a temporary home garden is being prepared as a result of the financial assistance from KTVI, Channel 2. See the story on page 18.

I encourage Members to visit the newly renovated Climatron, the Shoenberg Temperate House and the Brookings Interpretive Center during the summer. The facilities now incorporate an exhibit that offers detailed information addressing what each individual can do to assist in resolving the serious environmental problems facing the world today.

Best wishes for a peaceful and enjoyable summer.

Peter H. Raven

L. A. KELLY

HECKMAN FAMILY DEDICATES GARDENS: On April 20, 1990, the Garden hosted dedication ceremonies for the new Margaret C. and William G. Heckman Bulb Garden and the enlargement of the Audrey Heckman Rock Garden. Members of the Heckman family attending included (left to right): Scott Hughes, John Moulton, Jr., Ruth Moulton, Lisa Hughes, Pamela Baker, Margie Heckman, Bill Heckman, Mimi Heckman, Guy Heckman, Sandy Cutler, Tony Cutler, and Adrian Baker.

Groundbreaking

FOR THE WILLIAM T. KEMPER CENTER FOR HOME GARDENING

MISSOURI BOTANICAL
JUN 27 1990
GARDEN LIBRARY

Ceremonies were held on the site.

> *"The Center is a collaborative effort by the entire St. Louis community to benefit the entire community."*
>
> **—Peter H. Raven**

Left to right: Steven Cline, David Kemper, Peter Raven.

RICHARD BENKOF

A ceremonial groundbreaking was held at 11:00 a.m. on May 8 at the future site of the William T. Kemper Center for Home Gardening. David W. Kemper, representing the William T. Kemper Foundation whose $1.25 million gift named the building, was joined by Garden director Peter H. Raven and Steven D. Cline, the manager of the Center. All took shovels in hand to celebrate the start of construction, expected to last about eighteen months.

The Kemper Center is the Garden's last construction project under the capital improvements drive running through the end of 1990. Dr. Raven noted, "This facility has been part of our master plan since 1973, arising in response to an increasing public demand for practical, comprehensive, and up-to-date information on how to use and care for gardens. We are delighted and deeply grateful that so many good friends, through their generous gifts, have joined us in making the Kemper Center a reality. In addition to the William T. Kemper Foundation, we wish to acknowledge the magnificent support of other major donors, including the Monsanto Fund, Mr. and Mrs. Henry Hitchcock, Dr. and Mrs. Walter Moore, the James S. McDonnell Foundation, Mrs. James S. McDonnell, Jr., the Stanley Smith Horticultural Trust, the Spencer T. and Ann W. Olin Foundation, and the Federated Garden Clubs of Missouri."

David Kemper, Chairman of the Commerce Bank of St. Louis, added, "The Garden has been at the vanguard in helping people work together and appreciate their environment.... We hope our gift... will further that objective by providing a setting for both practical education and inspiration for all of St. Louis."

Programs for the Center are now being planned in partnership with University Extension, including the University of Missouri System and Lincoln University. Explained Steven Cline, "This collaborative work represents an effort to consolidate our resources in working toward joint goals, such as promoting the Urban Gardening Program, forging stronger lines with the Gateway to Gardening Association, and providing top-quality information to the citizens of Missouri.

As of May 31, 1990, the capital campaign had raised $18,045,050.

Trustee Profile

Howard F. Baer

RICHARD BENKOF

(L-R): Robert Kresko, Howard Baer, Peter Raven

In 1960, Henry Hitchcock, a close friend of Howard Baer, encouraged Mr. Baer to become involved in the Missouri Botanical Garden. "The Garden was new to me and was 'sleepy' at that time. I joined the Board of Trustees, learned a lot about the Garden, bought ten acres in the country and planted it, and became an avid gardener myself. Today I believe the Garden is the best in North America, and in ten years, if progress continues as it has during Dr. Raven's tenure, it will be recognized as the best in the world," commented Mr. Baer.

On April 18, 1990, the Trustees applauded Mr. Baer for thirty years of service to the Garden. During those years, he witnessed dramatic changes including the opening of the Climatron in 1960, the opening of the Lehmann Building in 1972, the creation of a new entrance into the Garden with the completion of the Ridgway Center in 1982, and the recent total renovation of the Climatron. "The Garden has been opened up to the public and two factors have stimulated that opportunity," according to Mr. Baer. "The expansive thinking of Dr. Raven and our entry in 1983 into the Zoo-Museum District I believe are the factors that have made this possible."

Howard Baer has had an impact in these changes. He came to St. Louis in 1927 from West Virginia with his wife, Isabel, who was a St. Louisan, and has been an integral part of this community ever since. After retiring at a relatively early age, Mr. Baer devoted his life to St. Louis and to furthering cultural opportunities throughout the region. A family oriented man, he has written two personal books about his family, one of which has the family tree that "couldn't be updated in its present format because there wasn't a sheet of paper large enough to hold all the generations." His third book, *St. Louis to Me*, consists of his footnotes on fifty years in St. Louis, documenting his involvement in efforts that have moved St. Louis forward, such as the creation of the Zoo-Museum District.

The Metropolitan Zoological Park and Museum District was Mr. Baer's brainchild. He conceived the idea, thought it through with other St. Louis leaders, worked hard for its passage in the Missouri General Assembly, and was a key player in the first election that took place on April 6, 1971. At that election, the Zoo, the Art Museum, and the Museum of Science became the first three institutions to receive property tax support under the formation of the Metropolitan Zoological Park and Museum District.

He worries about the Zoo-Museum District and is hopeful that the people of St. Louis will always realize the benefits to everyone of supporting some of the greatest community resources in the world through the District.

Serving for many years on the Zoo Commission and committed to other St. Louis regional efforts, Mr. Baer is also well-recognized for his interest in and knowledge of sculpture and, as such, serves as a member of the Garden's Sculpture Committee.

EDUCATION DIVISION NEWS

New Programs for Adult Gardeners

Garden staff have teamed up with faculty at St. Louis Community College at Meramec to offer two exciting programs this fall.

Gardener Training

This is a new program designed to enable students to enhance their gardening skills. The program provides hands-on instruction in basic horticulture principles to those who plan to manage landscapes. Courses address plant selection and care, weed and pest control, preparation and use of garden soil, and lawn care. Successful completion leads to a Certificate in Gardener Training.

Horticulture Specialization

The Horticulture Specialization program was designed by faculty at SLCC-Meramec and horticulture professionals and primarily serves persons who are currently employed in the field.

The program includes the courses listed for the Gardener Training Program above, as well as additional courses in plant production, landscape design and construction. Either General Botany (BIO:124) or Introductory Horticulture (HRT: 101) is a prerequisite for this program. Successful completion leads to a Certificate of Specialization in Horticulture.

Course Information

Some classes will be taught in the evenings at the Missouri Botanical Garden. Other classes will be held on the Meramec campus. Instructors include professionals from the Garden staff, SLCC-Meramec faculty, and guest lecturers.

Courses offered for both the Gardener Training and Horticulture Specialization programs begin in the fall semester. For more information about programs, courses and application procedures, please write: Admissions Office, St. Louis Community College at Meramec, 11333 Big Bend Blvd., St. Louis, MO 63122. You may call (314) 966-7601 at SLCC-Meramec or (314) 577-5190 at the Garden.

The Horticulture department at SLCC-Meramec was established in 1967 to train professional horticulturists. It is the only degree-granting horticulture program in the St. Louis area.

Trustees Elected at April Meeting

At their April 18, 1990 meeting, the Board of Trustees elected attorney Charles Kopman as a Term Trustee, with a term to expire in January, 1993. Andrew C. Taylor was elected a Life Trustee, and C. C. Johnson Spink was elected as an Emeritus Trustee. Mr. Taylor joined the Board in 1989. Mr. Spink has served on the Board since 1974, and was president 1981-84.

JAMES P. BLAIR, NATIONAL GEOGRAPHIC SOCIET

"THE PLANT HUNTERS"

National Geographic Profiles the Garden

The Garden is featured in the August, 1990 issue of *National Geographic* magazine. "The Plant Hunters," by Boyd Gibbons, explains the Garden's research program in tropical botany through first hand accounts of the work of Peter Raven and other Garden scientists. The crisis of deforestation, the growth of the Garden's facilities and programs, and challenges for the future are brought vividly to life.

The article is illustrated with photographs by James P. Blair, whose work is displayed in the Brookings Interpretive Center. Blair's magnificent photographs will be on exhibit at the Garden throughout July (see Calendar of Events, page 12) and again in September, when Blair will be at the Garden to present a lecture on his work. Copies of the August issue of *National Geographic* will be available for purchase at the exhibit in the Ridgway Center.

"The Missouri Botanical Garden has grown beyond its four walls to become one of the world's leading research institutions."

—Boyd Gibbons
National Geographic

United Nations Association Unveils Exhibit at World Environment Day

L. A. KELLY

RAIN FORESTS
GREENHOUSE

(Left to right): Charles Reay; Dr. Virginia Weldon, vice president for public policy, Monsanto Company; Courtney Obata; Peter Raven; Gyo Obata, president and chairman, HOK.

AS part of the observance of World Environment Day at the Garden on June 3, the United Nations Association (UNA) unveiled a splendid new exhibit on global environmental issues. The exhibit was made possible by support from the Monsanto Company and Hellmuth, Obata & Kassabaum, Inc. (HOK), which designed and fabricated the display.

The exhibit discusses such topics as acid rain, global warming, tropical deforestation, overpopulation, and ozone depletion, and presents ideas on what can be done to confront and solve the problems. The text and concepts for the display panels were developed jointly by Dr. Peter H. Raven; Dr. George Johnson, former director of The Living World at the St. Louis Zoo and professor of biology at Washington University; and Charles P. Reay, senior vice president of HOK. Courtney Obata, a board member of UNA in St. Louis, conceived of the project and coordinated its production.

World Environment Day was cosponsored by UNA and the Garden. The afternoon's activities attracted hundreds of visitors who enjoyed exhibits, musicians, dancers, a parade, tours, games and contests.

The UNA exhibit is currently on display in the Brookings Interpretive Center at the Garden, where it makes a wonderful addition. The Garden is preparing additional displays to complement the UNA exhibit.

Students Celebrate Earth Day 1990

MARCIA ARDIS

Students at Glen Carbon School, with their teacher Cheryl Vieth (kneeling, front) and Garden researcher Roy Gereau (standing, right).

WHEN the students at Glen Carbon Elementary School wanted to donate the proceeds of their Earth Day tee shirt sale to an environmental organization, Cheryl Vieth, one of their teachers, knew of one in their own backyard. "We felt we should keep our support local. My husband and I had recently joined the Garden, and when I told the students about your research and education programs, they thought it was a great idea to give the Garden the $159 from the sale."

April 18 was a day-long Earth Day learning event for the Glen Carbon Elementary K-5 students, including an afternoon presentation on habitat diversity and species preservation by Roy Gereau of the Garden's Research Department.

Gereau found it quite a challenge "to take what, for scientists, can be a very complex subject and distill it into an interesting topic for young learners. I showed slides of the plants and animals dependent on different habitats, such as rain forest, mountain and desert, and basically explained that you can't conserve species unless you conserve where they live."

Gereau's presentation followed a morning-long series of workshops in which the students made and had to clean up "oil slicks," wore "garbage bags" of prewashed cans and bottles to empathize with the littered Earth, constructed and ate "food chains," and learned about water pollution and recycling. In closing the day, Roy and his new friends even got to sample a very tasty "Edible Landfill" the students had made.

WHITE PAPE
for
RECYCLING

L. A. KELLY

Above, left to right: **Dee Michaels, Susan Murphy and Paul Brockmann with collection barrels in the Administration Building.**

RECYCLING AT THE GARDEN

SINCE JANUARY THE GARDEN HAS SENT MORE THAN TWO TONS OF WASTE PAPER TO BE RECYCLED. THIS IS EQUAL TO SAVING THIRTY-FOUR TREES.

Missouri Botanical Garden has long been a leader in advocating conservation policies on a global scale. Closer to home, the staff has been working to implement environmental responsibility here at the Garden as well.

As many institutions have discovered, recycling is not as easy as it sounds. It takes time to train people how to separate properly different kinds of paper waste, for example. Coordinating pick-ups from varied locations is difficult. But thanks to the enthusiasm and willingness of staff members, the Garden has made great progress in implementing a variety of programs.

Over a year ago, the Gardenview Restaurant stopped using styrofoam packaging and cups. Plates and cups made from recycled paper were substituted. The Garden began to print its publications on recycled papers as availability permitted, and printers and suppliers were requested to help locate sources for these papers. High quality printing papers containing recycled material are at last becoming more available in a wide range of stock.

Last winter the Garden controller's office began to collect greenbar computer paper. Programmer/analyst Dee Michaels initiated the project. The membership office joined in the effort, and herbarium assistant Susan Murphy implemented collection procedures in the Lehmann Building. Barrels were quickly added to separate and collect white, colored, and previously recycled paper, and in March the program went Garden-wide with collection barrels in five locations.

Since January the Garden has sent more than two tons of office paper waste to be recycled. Estimates indicate that this is equal to saving 34 trees.

Other efforts have also been successful. Under the supervision of Paul Brockmann, director of general services, the Garden has established a central collection area for cardboard boxes from all departments. Dee Michaels has located a source of recycled computer paper that performs well in data processing. Researchers use stacks of newspapers to dry and press plant specimens. Susan Murphy collects styrofoam egg cartons to cushion shipments of plant specimens for mailing, and more newspapers are used to wrap plant shipments. The restaurant separates glass and cans from its trash flow. Aluminum soda cans are collected from all offices.

The Garden recently became one of the first institutions in St. Louis to purchase paper towels and bath tissue made from recycled paper for use in public and office restrooms, and the restaurant now uses paper napkins of recycled paper. These products meet EPA guidelines for content of post-consumer material.

All of these efforts add up to a significant contribution. Estimates indicate that waste paper constitutes more than 40 percent of solid waste discarded in landfills. As landfills fill up rapidly, we all recognize the need to help solve the problem. Small changes by individuals do make a difference; the Garden and its staff are committed to continuing and increasing efforts for environmental responsibility.

▲ *PATIO GARDEN*

THIS past June 10, more than 1500 Garden members were treated to the opportunity to visit nine of the loveliest private gardens in St. Louis. This was the third St. Louis Garden Tour; the event was first held in 1986.

The Grand Finale Party was held that evening at a beautiful home not included on the day's tour. The evening was highlighted by tours of the authentic prairie led by its creator, William Davit of Shaw Arboretum. Round trip tickets for two to London, England, compliments of the Travel Center, Inc., were given away at the party.

The tour and party were made possible by the hard work of Mrs. Walter F. Ballinger II, Mrs. Stephen F. Bowen, Jr., and Mrs. Henry W. Dubinsky, chairmen, and by the efforts of their committee and volunteers. Thanks go to all who participated.

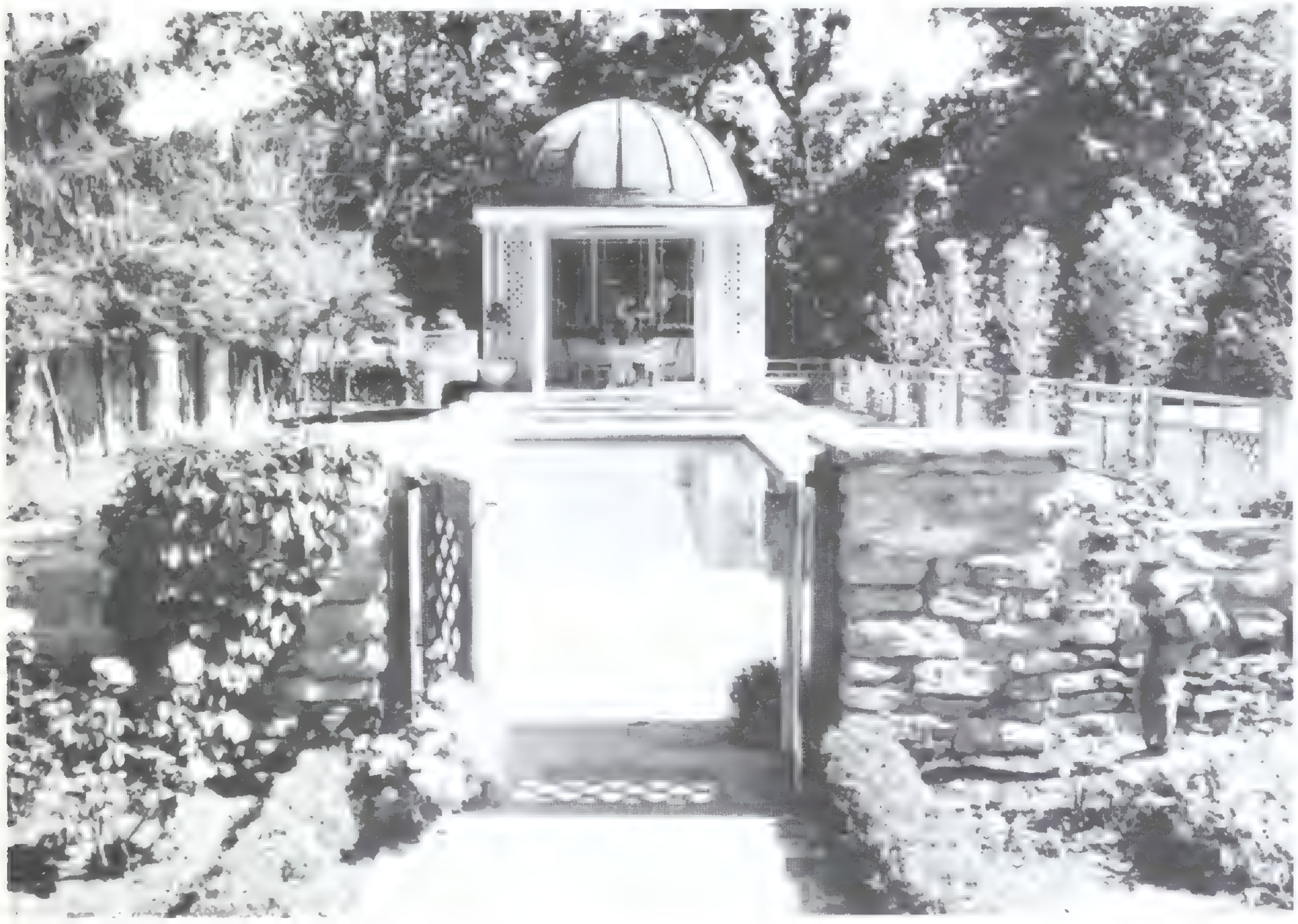
▲ *WOODLAND GARDEN*

▲ *POOL GARDEN*

▼ *COTTAGE GAR*

▲ *NATURALIST'S GARDEN*

▲ *LAWN GARDEN*



▲ *GAZEBO GARDEN*

▲ *TERRACE GARDEN*

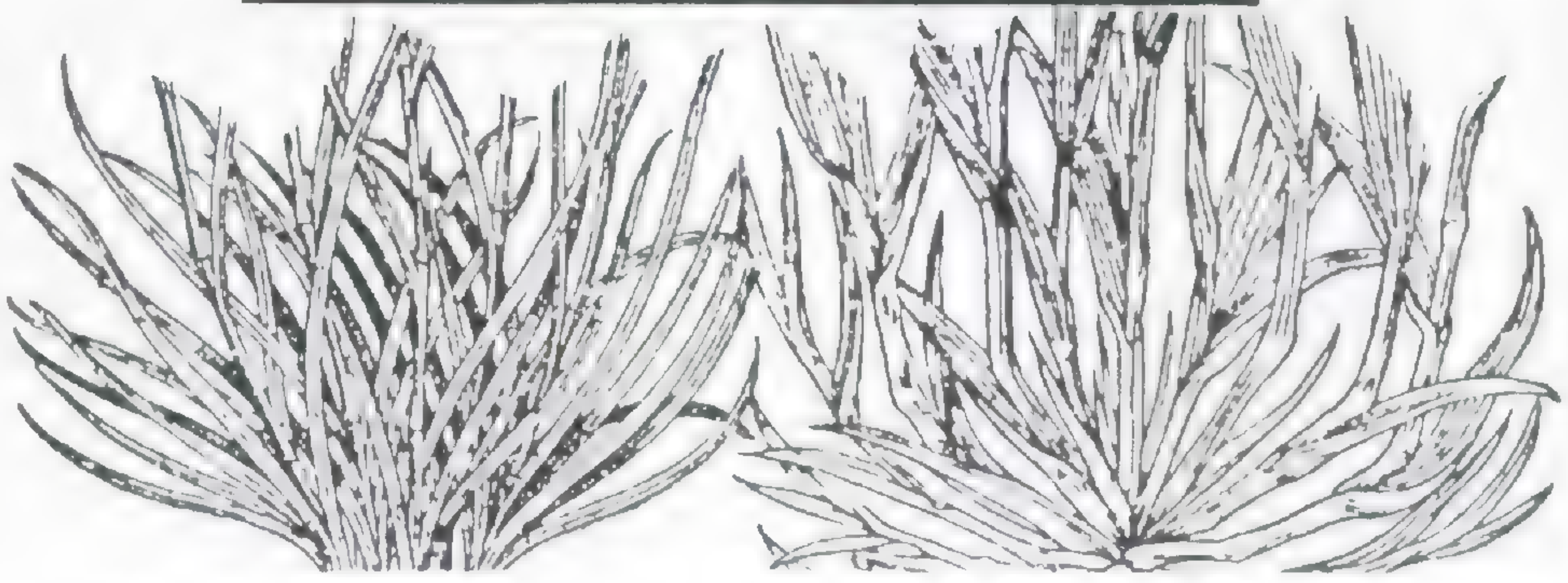
▼ *CITY GARDEN*

RICHARD BENKOF

The outstanding efforts of the Garden Tour committee and other volunteers were greatly appreciated. Committee members, pictured with Peter Raven, center, (left to right): Ellen Dubinsky, Mary Randolph Ballinger, Sue Oertli, Sue Rapp, Ann Bowen. Not pictured: Ted Atwood.

1990 Garden Tour

Home Gardening



Environmental Lawn Care

For most homeowners, the lawn is the most cursed yet loved area around the house. Some people see turfgrass as a necessary evil but it truly has a number of very desirable characteristics; I try to remind myself of these while I'm pushing the mower every week during the summer.

I consider myself typical when it comes to lawn care. I mow on Saturday and water Saturday and Sunday during the hot weather. I fertilize in the spring and fall and watch for grubs when I dig the garden each year. Mostly, I want it to look nice without being a lot of trouble.

Because I don't want to spend that much time on my lawn, I look for easy maintenance techniques that do not sacrifice the quality of the turf. Here's one that is easy, actually improves the lawn, and is environmentally smart.

GRASS CLIPPINGS

It once was widely accepted that if you left your grass clippings on the lawn, over time a thatch layer would build up. This has prompted a stout tradition of bagging the clippings. Thatch is not desirable, of course, because it prevents water penetration, harbors insects and diseases, and makes turf more susceptible to drought and insects. However, leaf clippings contribute very little to thatch buildup in lawns. Thatch is composed mostly of dead roots, crowns and shoots, which do not decompose as quickly as leaf blades. Grass clippings actually act as an excellent source of fertilizer.

Twenty percent of landfill waste comes from residential yards and certainly is recyclable. Despite this fact, the tradition of collecting grass clippings still goes on. They end up on the curb headed for the dump. Illinois legislation will ban yard waste being hauled to landfills effective July 1, 1990. This policy is established or pending in a half-dozen other states.

Clearly, we need to reexamine our traditions. The good news is that changing our ways requires no great sacrifice. You will save time and money, your lawn can still look great, and you will be recycling materials back into the ecosystem.

LAWN FACTS

To appreciate why it is good practice to leave grass clippings on the lawn, we need to understand a few facts about turfgrass. First, St. Louis lies in a north-south climatic transition zone presenting both cold and hot temperature extremes. We can plant one of two types of grasses, cool season or warm season. The cool season grasses include bluegrass, fescue, and perennial ryegrass. The warm season grasses include zoysia and bermuda.

Cool season turfgrasses have two periods of active growth, in the spring (April/May) and in the fall (September/October). Warm season grasses have one growth period in the summer when it is hot (July/August). Unfortunately these two types of grasses cannot be mixed in one lawn! However, fescue is a popular, all-purpose grass for St. Louis lawns. The new, improved varieties have a finer texture and fewer clumps than you may remember, and the hardy plants can withstand a hot summer.

Turfgrass leaf blades live naturally only 25 to 49 days, while their roots have a life of 42 to 60 days. In reality, your lawn is dying before your eyes. However, a healthy lawn grows faster than individual grass plants die off, so you do not really notice dying grass until something upsets the balance, like drought or pests.

To keep your lawn green, you need to encourage the formation of more grass plants. There are several easy ways to do this.

MOWING

When the mower goes into action, be careful to remove no more than one-third of the green leaf area per mowing. This causes the turfgrass plants to grow horizontally by putting out rhizomes that initiate new plants, promoting a thicker lawn.

The same response occurs when one uses a vertical mower or dethatcher. In this case, the procedure cuts the rhizomes or stolens that connect mother plants to juvenile plants, again stimulating formation of a thicker lawn. It is desirable to dethatch your lawn when the thatch approaches one-half inch in thickness. This is true for either cool or warm season grasses and is easy to monitor.

Raising mower height minimizes stress to grass plants, especially during hot periods of mid-summer, and actually slows the growth rate. Mowing more frequently reduces the bulk of clippings, and helps them settle quickly to the soil. Both practices promote stronger, more vigorous turfgrass.

In comparison, cutting grass too short forces the plants to grow more quickly to replace lost tissue. This stresses and weakens the roots and leaves the plants more susceptible to disease, drought and insects.

THE ULTIMATE LAWN

Promoting vigorous lawns combines frequent mowing and raised mower heights.

WHAT LAWNS CAN DO FOR YOU

While you are pushing the mower this summer, remember that lawn care is a two-way street. Healthy grass will:

- Trap and hold rainwater
- Reduce run-off and contribute to ground water
- Reduce surface temperatures by 30° to 40°F
- Help to control erosion
- Reduce dust, noise, glare, and fire hazards.

This is why the good golf courses remain in top shape and why the sod you buy for your landscape is thick and vigorous enough to be cut and transplanted successfully to another site.

For a high maintenance, high quality lawn, mow twice a week during the maximum growth period: May to mid-June for cool season grasses and July to August for warm season grasses. Avoid mowing when the lawn is wet as leaf clumps will not sift down. If you cannot tolerate even the thought of clippings left behind, collect and compost the clippings or spread them thinly on other beds. Why waste the fertilizer?

CLIPPINGS AS FERTILIZER

Leaving grass clippings on the lawn saves both time and money. Leaf clippings are a good source of fertilizer. The nutrient analysis of grass from a healthy lawn is in the ratio of 4:1:2 (nitrogen:phosphorous: potassium). This is the exact balance of fertilizer elements that you should be using on your established lawn. If clippings are left on the lawn after mowing, only a minimum of additional fertilizer is needed. For cool season grasses, a light May application (one quarter to one half pound of nitrogen per 1000 square feet) and a heavier September application (one to one-and-a-half pounds of nitrogen per 1000 square feet) is sufficient. Warm season grasses like zoysia will do fine with one application close to their optimum growth period in early July.

"DON'T BAG IT" PROGRAM

To encourage recycling of lawn waste, University Extension has initiated a local program for Webster Groves, Kirkwood and Glendale residents in which individual homeowners will receive free fertilizer for one year, free soil testing, and technical assistance from Extension/ Missouri Botanical Garden trained Master Gardeners. The residents will follow specific directions on lawn care, including not bagging grass clippings. The homeowners will follow proper procedures on mowing, watering and fertilizing their lawns. A community the size of Kirkwood could divert as many as 15,000 bags of lawn clippings each week from the landfills.

AT THE GARDEN

The Missouri Botanical Garden has been leaving grass clippings on the lawns for many years. We find that this works well for most of the areas in the Garden. Where grass clippings may work their way back into buildings, they are collected and added to the compost pile for recycling.

—Steven D. Cline, Ph.D.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Saturday, 9 a.m. to noon, at ***577-5143.***

July Tips

- For fall harvest, sow seeds of collards, kale, sweet corn, cucumbers and summer squashes by mid-month.
- Plant late potatoes by July 15.
- Broccoli, cabbage and cauliflower transplants for the fall garden should be planted outdoors by the end of the month.
- To minimize damage to cucumber and squash plants from vine borers, cucumber beetles and squash bugs, try using a lightweight, spun polyester fabric cover to exclude these pests. Remove the cover once flowering begins to insure pollination of these crops.
- Don't smoke cigars or cigarettes when working in the garden. Tobacco products may spread virus diseases to susceptible plants such as tomatoes, peppers and eggplants.
- Mulches applied now help to control garden weeds, retain soil moisture and modify root zone temperatures. Organic mulches will also add nutrients to the soil as they slowly decay.
- As crops are harvested, add disease-free residues to the compost pile. Turning the pile regularly will help speed decomposition.
- Finish pinching back mums by mid-month.
- Perennials that have finished blooming should be deadheaded. Cut back the foliage some to encourage a tidier appearance.
- Oriental poppies can be divided and reset now.
- Keep annual flowers picked to prevent the formation of seed heads and to prolong blooming.
- Start seeds of pansies, foxgloves, larkspurs, hollyhocks and forget-me-nots now for next year's bloom.
- Remove infected leaves from roses as soon as you observe them.
- As temperatures rise, raise the mowing height of your lawn by one-half to one inch for cool season grasses such as fescue and bluegrass.
- Monitor lawns for damaging grub activity. If necessary, insecticides may be applied in late July or early August.
- Cuttings of spring flowering shrubs can be made now.

August Tips

- Sow seeds of beans, beets, and carrots in the first week.
- Lettuce, turnips, greens and winter radishes should be sown about mid-month. Early radishes and spinach should be sown at the end of the month.
- Madonna lilies can be planted or transplanted now.
- Dig and divide bearded iris now.
- Water early in the day so that plants have time to dry before evening.
- Fertilize roses with 12-12-12 for the last time by August 15.
- Start making cuttings of houseplants now.
- Lawn areas slated for major renovation can be worked near the end of the month. Persistent weeds may be killed with a non-selective herbicide. The more attention paid to soil preparation prior to seeding, the greater the benefit to the long-term health of the lawn.
- Sow a green manure or winter cover crop of rye, oats or rye grass in garden areas where crops have been harvested. This will be tilled under next spring to enrich the soil.

—Chip Tynan, The Answer Service

JULY IS "KIDS' MONTH AT THE GARDEN"

Watch for the symbol above. It indicates activities especially planned for children.

JULY

2 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. Free, expert advice from Master Gardeners on gardening questions and problems. Regular Garden admission.

3 TUESDAY

Children's Film Festival: "All Dogs Go to Heaven"

11 a.m. and 1:30 p.m., Shoenberg Auditorium. This popular series returns with a different film each week in July. Doors open 30 minutes before showtime. $1 per person.

11 WEDNESDAY

Children's Film Festival: "Cinderella"

11 a.m. and 1:30 p.m., Shoenberg Auditorium. See July 3 for details.

13 FRIDAY

Folklore and Legends

11 am. to 3 p.m., Ridgway Center. The St. Louis Gateway Storytellers recount folktales, legends and superstitions from around the world. Presented in conjunction with the St. Louis Public Library. Free with regular Garden admission.

14-22 SATURDAY-SUNDAY

Henry Shaw Cactus Society Show

9 a.m. to 8 p.m., Orthwein Floral Hall. Enjoy the amazing variety of these interesting plants. Free with regular Garden admission.

Missouri Botanical Garden

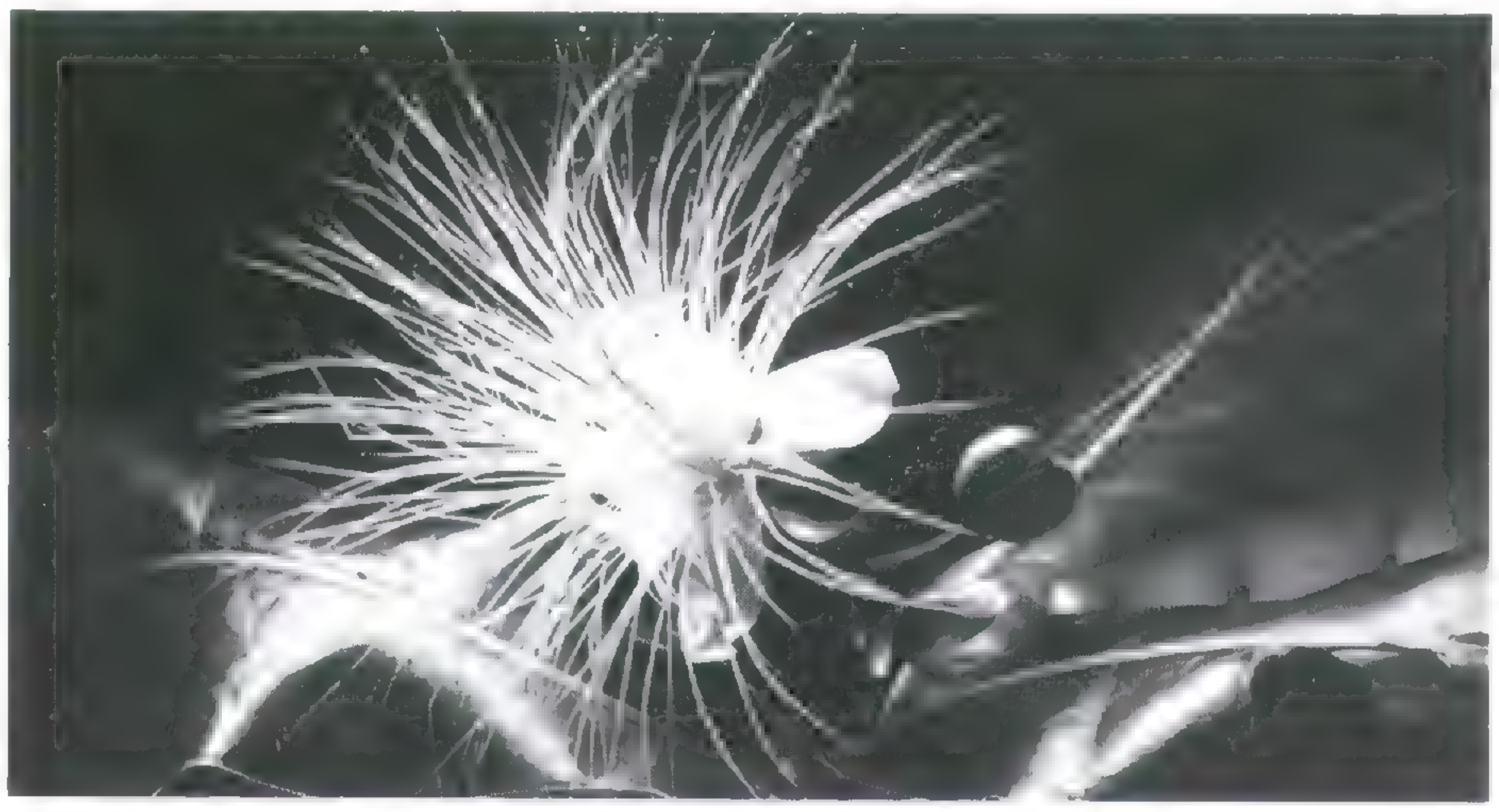
CALENDAR OF EVENTS

July-August 1990

RICHARD BENKOF

JULY 6 / MEMBERS' DAY Members' Musical Evening

5:30 to 9:00 p.m., Spoehrer Plaza; concert begins at 7:30 p.m. Listen to the sounds of the Gateway City Big Band, back by popular demand. Bring a picnic supper if desired, and lawn chairs and blankets for seating. Cash bar available. Free, for Members only.



JAMES P. BLAIR, NATIONAL GEOGRAPHIC SOCIETY

JULY 1-29 / "THE PLANT HUNTERS" National Geographic Photography Exhibit

9 a.m. to 8 p.m. daily, Ridgway Center. James P. Blair, staff photographer for the *National Geographic*, exhibits the magnificent pictures he took in preparation for the August 1990 feature story "The Plant Hunters: A Portrait of the Missouri Botanical Garden." Free with regular Garden admission. *See page 5.*

DAILY WALKING TOURS

The Garden Guides are pleased to announce that walking tours will be led daily this summer at 1 p.m. beginning July 1. Join a knowledgeable Guide and discover the history, architecture, sculpture, ecology and horticulture of the Garden while enjoying its summer beauty. Meet at the Ridgway Center ticket counter. Free with regular Garden admission.

16 MONDAY

Botanical Beauty Costume Workshop

9 a.m. to 1 p.m., Beaumont Ro
Come prepared for the Botanica
Beauty Contest on July 21, with
help of Riverfaces. Advance
registration and fee required. C
577-5141 for more information.

Plant Clinic

9 a.m. to noon, Ridgway Center
See July 2 for details.

18 WEDNESDAY

Children's Film Festival: "Charlotte's Web"

11 a.m. and 1:30 p.m., Shoenbe
Auditorium. See July 3 for detail

21 SATURDAY

Botanical Beauty Contest an Garden Hunt

11 a.m., Ridgway Center and
grounds. Children come dresse
their favorite flower and join in t
parade. Prizes will be awarded.
Then join in the annual Garden
Hunt, and take home your own
"botanical beauty." Call 577-51
for more information. Free with
regular Garden admission.

Smithsonian Institution Lect "The Fate of the Tropical Rai Forest"

7:30 p.m., Shoenberg Auditoriu
The Garden hosts Judith Gradw
Special Assistant, Biological
Diversity, Smithsonian Office of
Assistant Secretary for Researc
who presents a slide lecture as p
of "Smithsonian Events in St.
Louis." Tickets are $4, and mus
reserved in advance. Program
brochures with registration form
are available at the Ridgway Ce
ticket counter, and reservations
must be mailed directly to the
Smithsonian; no phone reservat
accepted. Call 577-5141 for
information.

TUESDAY

**y Shaw Birthday
ration**

a.m. to 2 p.m., Tower Grove
e lawn. The Tower Grove
e Auxiliary celebrates the
birthday of the Garden's
er. Lemonade, iced tea and
es will be for sale under the
and Daisy the Clown will be on
Proceeds benefit the Tower
House restoration fund.

WEDNESDAY

**ren's Film Festival:
ar, The Movie"**

n. and 1:30 p.m., Shoenberg
orium. See July 3 for details.

26 THURSDAY

Volunteer Evening

5:30 to 7:30 p.m., Ridgway Center. This very special party for our very special volunteers has been rescheduled from June 5. Watch your mail for details. Attendance by invitation only.

28-29 SATURDAY-SUNDAY

Urban Gardening Fair

7 to 9:45 a.m. Saturday, registration; open to public noon to 5 p.m. Saturday, 9 a.m. to 4 p.m. Sunday. Ridgway Center. Coordinated by the Gateway to Gardening Association in cooperation with the Garden and the University Extension. Community gardeners are invited to display vegetables, flowers, herbs, fruits, and canned goods in juried competition. Prizes will be awarded. Other activities include games, demonstrations, exhibits and lectures. Free with regular Garden admission. Call 842-4262 for more information.

29 SUNDAY

Iris Society Sale

11 a.m., Ridgway Center, Beaumont Room. The Greater St. Louis Iris Society holds its annual sale of surplus iris rhizomes from the Goodman Iris Garden at the Garden. Proceeds benefit the Garden's iris display. Come early! The supply sells out quickly.

31 TUESDAY

Puppets Galore

11 a.m. to 4 p.m., Ridgway Center and grounds. A fun-filled day with the Puppet Guild of St. Louis, Bob Krammer's Marionettes, and the Paul Mesner Puppets from Kansas City. Advance registration and a small fee are required for workshops; call 577-5141 for information. Visitors not participating in workshops are admitted free with regular Garden admission.

AUGUST

SATURDAY

**ot Day Event
rise in the Climatron"**

a.m. Bring your camera! A
ed tour with refreshments, for
ots and their families. Watch
MoBot News for details. For
ot Club membership
mation, call 577-9500.

19 SATURDAY-SUNDAY

m Porcelain Exhibit

n. to 8 p.m. daily, Ridgway
er. 40 floral sculptures in honor
e Spink Gallery's 500,000th
r. See page 20.

AUGUST 4—LABOR DAY, SEPTEMBER 3
International Month

In cooperation with the St. Louis Center for International Relations, the Garden hosts activities spotlighting the culture of St. Louis's oldest and newest sister cities. The celebration culminates in the annual Japanese Festival. *See August 6-12 and 14-19.*

6-12 MONDAY-SUNDAY

Guyana Week

9 a.m. to 8 p.m. daily, Ridgway Center. St. Louis's newest sister city, Georgetown, Guyana, is the focus of festivities including movies, storytelling, lectures, and displays. Call the Center for International Relations for more information, 454-1744.

6 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See July 2 for details.

AUGUST 11
MEMBERS' DAY
Early Morning Stroll

6 to 9 a.m. Ridgway Center and grounds. Come enjoy the beauty and tranquillity of the Garden at sunrise. Coffee is provided. Free, for Members only.

PATRICK WATSON

14-19 TUESDAY-SUNDAY

German Week

9 a.m. to 8 p.m. daily, Ridgway Center. In honor of Stuttgart, Germany, St. Louis's oldest sister city. Highlights include a lecture, luncheon and exhibit presented by the Hummel Society, and travelogues, dancers, business seminar and luncheon, music, and a celebration in honor of the 10th anniversary of the German-American Student Intern Exchange. For luncheon reservations and information contact Wilma Prifti, St. Louis-Stuttgart Sister City Committee, 968-6912.

20 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See July 2 for details.

AUGUST 25—
SEPTEMBER 3
16th Annual
Japanese Festival

9 a.m. to 8 p.m. daily, Ridgway Center and grounds. Open until 10 p.m. on evenings with Candlelight Walks. See back cover for details.

From the Membership Office

L. A. KELLY

At the Mother's Day Luncheon (left to right): James Hageman, chairman of Famous-Barr Company; Marshall Crosby, assistant director of the Garden; Sue Rapp, president of the Members' Board; Bill Whaley, divisional vice president and merchandise manager, Famous-Barr Company; and Paul Cavalli, senior vice president for sales promotions and advertising, Famous-Barr Company.

Thank You, Famous-Barr!

The annual Mother's Day Luncheon on May 11, sponsored once again by Famous-Barr Company, was a delightful occasion enthusiastically enjoyed by all. Famous-Barr has sponsored a number of special events at the Garden in the past two years, including the 1989 Fragrance Festival, the Encore! gala benefit with Bobby Short, and the Rain Forest Safari Party held last March in the newly opened Climatron. The Garden and its members are deeply grateful to Famous-Barr Company for its outstanding support of these events.

MEMBERS' TRAVEL PROGRAM

Czechoslovakia and Hungary

SEPTEMBER 1-15, 1990

The Garden is co-sponsoring this exciting trip with Marquand Park Foundation of Princeton, New Jersey. The tour will be led by Patrick Bowe, who has led previous Garden members' tours and is writing a book on the gardens of Eastern Europe. Highlights include:

- The 19th-century garden of Count Silva Taronca in Prague, center of the Institute of Ornamental Gardening.
- Archduke Ferdinand d'Este's castle at Konopiste.
- At Brno, Lysice Castle, the University Botanical Garden, and the monastery where Mendel's work is commemorated.
- Baroque church and castle of Krtiny, headquarters of the Czechoslovakian Forestry Institute.
- Bohemia, "Tuscany of the North," with visits to Lednice and Valtice castles.
- Bishop's palace at Kromeriz; site of Battle of Austerlitz; Buchlovice Castle.
- Magnificent scenery of the Danube and the classical houses of the Esterhazy family.
- Lake Balaton and Budapest.

Land cost is $3,100 plus airfare of $1,020 from New York, plus a $200 tax-deductible donation to the Garden. For more information call (314) 577-9517.

Martha Stewart Will Headline October Event

Martha Stewart, author, gardener and expert on entertaining and decorating, will be the speaker at a luncheon lecture for the Center for Home Gardening on October 16 at the Adam's Mark Hotel. Watch for more details on this exciting Garden event!

Martha Stewart

Reciprocal Garden Memberships

When planning your summer vacation, consider visiting any one of 57 botanical gardens and arboreta throughout the country. You will receive free admission and special privileges, just as their members do when visiting the Garden. Call the Membership Office at 577-5118 for eligible gardens in your vacation area.

REMINDER: Deadlines for Japan and Australia Tours

Reservations for the Garden's tour to Japan, August 6-20, are due by July 15. Reservations for the tour to Australia, New Zealand and the South Pacific, August 25-September 11, are due by July 15. For more information, see the brochure mailed recently to all members, or call (314) 577-9517.

GARDEN WALKERS BREAKFAST

If you love to take an early morning walk, come to the Garden on Wednesday and Saturday mornings this summer for the "Garden Walkers Breakfast." The Garden opens its doors at 7 a.m. A "heart-healthy" breakfast of cereals, fruit, juice, and yogurt will be offered from 7 a.m. until 10:30 a.m. in the Gardenview Restaurant at a price of $3.25.

Garden Walkers provides a pleasant setting for fitness-minded individuals to walk. "The early morning hours are such a wonderful time to walk, and the Garden is a beautiful place to take in the sights, sounds, and smells of the early morning," said Dr. Peter H. Raven, director of the Garden. "We delight in giving St. Louisans this opportunity to enjoy these early hours."

Maps indicating mileage on various paths around the Garden will be distributed at the ticket counter. The greenhouses will not open until regular opening hours at 9:00 a.m. Admission is free before noon every Wednesday and Saturday.

PATRICK WATSON

Come enjoy the early morning hours at the Garden this summer.

The Garden's summer closing time of 8 p.m. will not be affected. The early-morning opening will end the last Wednesday before the Japanese Festival, August 22.

Volunteers Recognized

At a luncheon in honor of volunteers on May 11, individuals were recognized for 10 and 20 years of service to the Garden. Pictured below, left to right: Peter Raven, director; Carol McCloskey, 10 years; Kay Kruse, 10 years; Margaret Baldwin, 20 years; Jean Read, 20 years; Dorothy Bachar, 20 years; Ginny Blume, 20 years; Adam Donges, 10 years; Joyce Knobbe, 10 years; Warren Haberman, 10 years; Cliff Lecoutour, 20 years; Jeanne McGilligan, volunteer coordinator; Mattie Thompson, 10 years; Ken Lindenmann, 10 years; Mildred Long, 10 years. Not pictured: Olga Klickermann and Geraldine Grote, 20 years; Charmaine Hutchings, Ginni Edwards, Sheila Hoffmeister, Margaret Soehlig, Ellen Chamberlain, George Tribble, Imogene Hazzard, Carl Parres, Florence Guth, Jane Sharp, Susan Slater, Dorothy Strader, and Ed Schnar, 10 years.

L. A. KELLY

Gift Planning

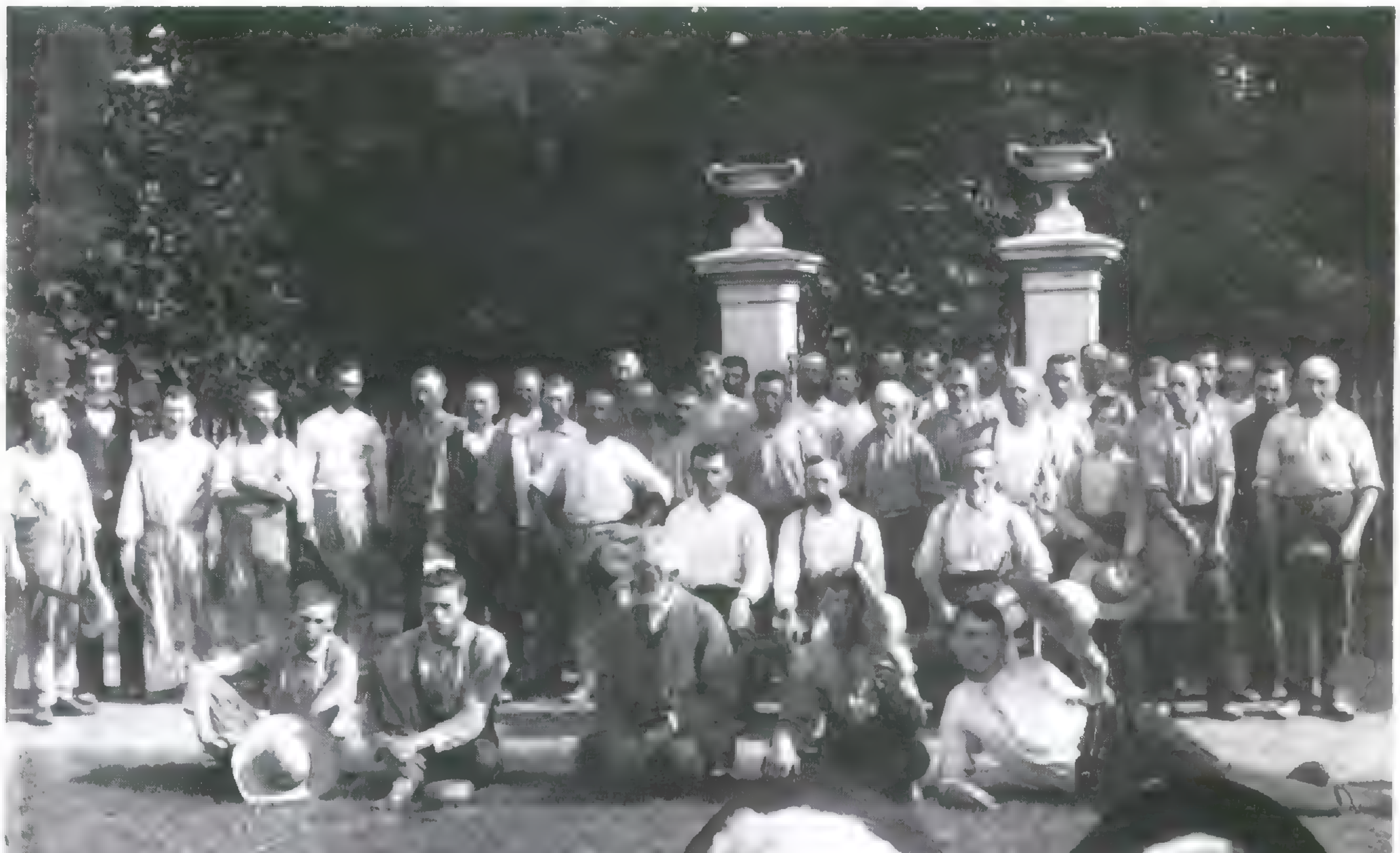
Throughout our lives we work to achieve the goals that we think are important for ourselves and our families, including providing for their material well being through the accumulation and conservation of assets.

Distributing property through gifts to loved ones may have tax implications because certain gifts are taxable. If we sell an asset that has appreciated in value, we are subject to gains tax. If we give the property to someone during our lifetime, we'll be subject to gift tax. If we bequeath the property under a Will, the transaction will be subject to the estate tax. Planning may help to minimize the tax impact.

The Garden is pleased to offer a booklet, "Tax Planning for Gifts of Property." This booklet examines methods of giving appreciated property to friends, loved ones, and also to charitable institutions like the Garden.

For your free copy of "Tax Planning for Gifts of Property," call Ernestina Short, Gift Planning Coordinator, at 577-9532, or write to her at P.O. Box 299, St. Louis, MO 63166-0299.

At right: Garden hands, c. 1890. James Dunford Jr. is seated, second from left; head gardener James Gurney is seated in center.



MISSOURI BOTANICAL GARDEN ARCHIVES

James W. Dunford Sr.

Lydia Dunford

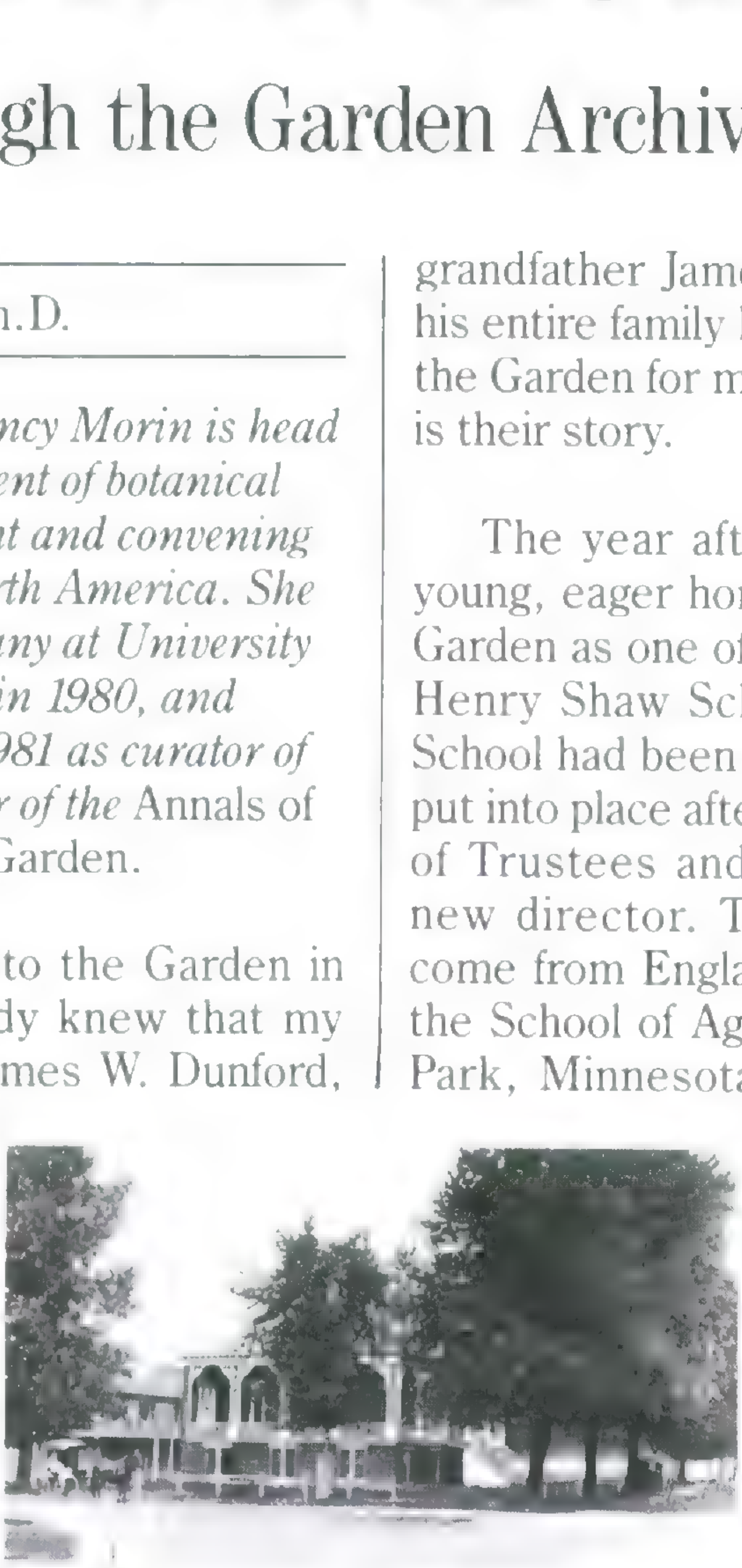
Three Generations

A Trip Through the Garden Archives

BY NANCY MORIN, Ph.D.

EDITOR'S NOTE: Nancy Morin is head of the Garden's department of botanical information management and convening editor of the Flora of North America. She earned her Ph.D. in botany at University of California, Berkeley, in 1980, and came to the Garden in 1981 as curator of the herbarium and editor of the Annals of the Missouri Botanical Garden.

When I came to the Garden in 1981, I already knew that my grandfather James W. Dunford, Jr., had been a student in the Henry Shaw School of Gardening. I had come across his name in the first Annual Report of the Garden, published in 1889. It was only a few months ago that a chance meeting with my cousin Kate McKee led me to investigate our family's history further. To my delight and astonishment, I discovered that my great grandfather James W. Dunford, Sr., and his entire family had been associated with the Garden for many years. The following is their story.



The Casino, June 1890.

The year after Henry Shaw died, a young, eager horticulturalist came to the Garden as one of the first students of the Henry Shaw School of Gardening. The School had been envisioned by Shaw and put into place after his death by the Board of Trustees and William Trelease, the new director. The young student had come from England, probably in 1887, to the School of Agriculture at St. Anthony Park, Minnesota, where he completed their horticultural program. In April 1890 James W. Dunford Jr. took up his studies at the Garden.

James and his family had saved for many years to make his opportunity in America possible. His father, James W. Dunford Sr., was also a gardener. Family history has it that James Sr. was trained at Royal Botanic Gardens, Kew, but this has not been verified. Apparently James Jr.'s eagerness for education and advancement impressed Trelease. It appears that Trelease invited the entire Dunford family to come to St. Louis to live in Shaw's Tea House, known as the Casino.

The Trustees had approved expenditures in 1889 to make repairs to the Casino so it would be suitable housing for the School of Gardening students. James Sr. and the two oldest daughters, Ada and Charlotte (there were nine children in all), came first. James Jr. left the School of Gardening in 1890 to join the Garden's gardening staff. His father began working as a gardener at the Garden right away, and Charlotte worked in the herbarium. By 1891 enough money had been saved to bring the rest of the family to St. Louis: mother Lydia, three more sons, and three more daughters, including Nellie, who had been born after James Jr. sailed for America.

Lydia and James Sr. lived in the Casino as dorm mother and father until 1908, when the building was torn down. Today the director's residence stands on the site. James Sr. worked at the Garden caring for the greenhouses on the east side

continued on next page

Garden Hosts Meeting on Species Plantarum Project

On April 17 and 18 the Garden hosted a meeting of distinguished scientists from around the world. The scientists came to discuss the Species Plantarum Project (SPP), an ambitious undertaking that aims to develop standardized descriptions of plant families worldwide. This is nothing less than a Flora of the World, and will be many years in the making. SPP will attempt to integrate what is known about plant families worldwide, and make the information available in both published and computerized form.

TROPICOS, the computer database system developed at the Missouri Botanical Garden, was selected for the project. Computer specialists from several institutions will meet at the Garden later this year to identify and implement improvements to the system that will enhance its effectiveness.

More than 100 institutions from all over the world have been invited to participate in SPP. Scientists attending the April meeting at the Garden included Ghillean Prance, director of the Royal Botanic Gardens, Kew; Phillippe Morat, director of the Laboratoire de Phanérogamie, Paris, and an honorary Trustee of the Garden; Peter H. Raven, Marshall Crosby, W. Douglas Stevens and Nancy Morin of the Missouri Botanical Garden; Richard Howard, vice president for research at The New York Botanical Garden; C. Kalkman, director, Rijksherbarium of Leiden; and Lawrence Skog, chairman of botany, Smithsonian Institution.

RICHARD BENKOF

(Left to right): Marshall Crosby, Nancy Morin, Peter Raven, Ghillean Prance, C. Kalkman, Lawrence Skog, Richard Howard, Richard Brummitt, W. Douglas Stevens, Phillippe Morat.

RICHARD BENKOF

(Left to right): William Tai, Ching-I Peng, Bruce Bartholomew, T. C. Huang, Peter Raven, Cheng-Meng Kuo, Warren Wagner, Robbin Moran, Timothy Lowrey, Thomas Lammers, Shong Huang, Yuen-Po Yang.

Taiwanese and U.S. Botanists Meet at Garden

On May 14-16, botanists from Taiwan, Republic of China, met with U.S. botanists here at the Garden to discuss possible collaboration on a botanical inventory of Taiwan. The six-year project would include computerizing herbarium collections of Taiwanese plants, developing collaborative research and collection programs, bringing the efforts of Taiwanese botanists into coordination with the international community, and eventually publishing a revised *Flora of Taiwan*.

The Taiwanese visitors were Tsing-Chieng Huang and Chen-Meng Kuo from National Taiwan University, Ching-I Peng from Academia Sinica, and Yuen-Po Yang of the Taiwan Forestry Research Institute. Dr. Huang, Dr. Peng, and Dr. Yang all did their graduate work at the Garden.

"This is a very exciting project," said Dr. Peter H. Raven, director of the Garden. "In the boldness of its conception and the breadth of its operations, it will truly set new international standards for dealing with the plant resources of a region."

Forero Appointed to Boards

Dr. Enrique Forero, the Garden's director of research, has been appointed to the Scientific Advisory Board of the Marie Selby Botanical Gardens, Sarasota, Florida. The seven member board, initiated by Selby's board of trustees and the executive director, serves to advise their director of research, Dr. Nalini Nadkarni, on the current and future research activities of the Gardens. Selby Gardens is dedicated to the cultivation, display, conservation and scientific study of epiphytic and tropical plants.

Forero has also joined the board of directors of the Berry Botanic Garden, Portland, Oregon. This garden is a leader in collections management, education, conservation and research in the Pacific Northwest. Forero has already been invited to be the annual speaker at the board meeting in March 1991.

ARCHIVES continued

of Tower Grove at Magnolia. One of these contained Hamburg grapes, another was used to force vegetables. Two of the daughters, Alice and Elizabeth, married Shaw School of Gardening students—Clyde Blankinship and Water H. Nehrling. Two of the brothers and Nellie worked for Missouri Pacific Railroad. Later, several of the family worked at Landis Machine Co. Working together seems to have been a family tradition!

What of James Jr., the one who started it all? He began a nursery in St. Louis County, then later owned a florist shop near Page and Kingshighway. He was President of the St. Louis Florists Club in 1903. In 1911 he moved to Sioux City, Iowa, where he continued in the florist business. His daughter Nan was my mother.

James Sr. worked at the Garden for 32 years, until his death in 1923. Great grandmother Lydia raised their nine children and mothered dozens of Garden students. She died in 1939.

The Dunfords were courageous and dedicated people. Their hard work and dedication helped to make the Garden what it is today. ■

CLIFF WILLIS

Dave Murray (left) with Steven Cline at the site of the new demonstration garden.

Garden and KTVI Team Up for Home Gardeners

The Garden and KTVI-TV (Channel 2) have joined forces to produce a weekly gardening segment that airs during KTVI's 5 p.m. newscast. "Dave Murray's Home Garden" presents viewers with up-to-date tips on home gardening.

Hosted by KTVI meteorologist and avid gardener Dave Murray, the two-minute segments are taped on location at the Garden's new demonstration vegetable garden. They air Thursdays in conjunction with Murray's live remote weather broadcast from the demonstration garden. The first segment was shown on May 24.

Garden horticulturists Steven D. Cline, Robert Bowden, and Chip Tynan help Murray guide home gardeners through the maze of gardening how-tos, must-dos, and what's news.

Regular features include a monthly checklist of suggested gardening activities, a monthly question-and-answer session where viewers' inquiries are answered by Garden experts, and, at harvest time, cooking tips for home-grown food. The segments are designed to be instructional and extremely timely.

The new, expanded demonstration vegetable garden is in its very beginning stages. Activities there parallel the home gardener's efforts as the demonstration area progresses from unplanted plot to robust garden during the course of this series. The garden is being planted with vegetables, berries, and small fruit trees. A flower cart with changing displays is part of the display as well.

The garden replaces the previous demonstration garden that was uprooted due to make way for construction of the Garden's Kemper Center for Home Gardening. The new demonstration garden was made possible through a donation from KTVI-TV.

The demonstration vegetable garden serves an interim role during construction of the Kemper Center for Home Gardening, which is scheduled to be completed in Fall 1991.

(Left to right): William D'Arcy, John Dwyer, Thomas Croat.

John Dwyer Celebrates 75th Birthday

On April 26, the Garden celebrated the 75th birthday of Dr. John Dwyer, curator emeritus, one of the founding members of the Garden's research team.

Remarks and tributes were made at the birthday by two longtime Garden colleagues of Dr. Dwyer, Dr. Thomas B. Croat and Dr. William G. D'Arcy.

Dr. Dwyer has been associated with the Garden since 1954. Though retired from St. Louis University where he was a professor, Dr. Dwyer is continuing his research on New World tropical Rubiaceae (coffee family). He has also been working on a nomenclator of Rubiaceae, a comprehensive listing of the 1,200 genera that have been described in that enormous plant family.

Library Receives Grant for OCLC

The Garden Library has received an $89,000 grant from the Andrew W. Mellon Foundation that will enable the Garden to continue its joint cataloging program with The New York Botanical Garden Library. Under this program, begun in 1978, both libraries are cataloging all of their books and journals into the Online Computer Library Center (OCLC). OCLC is a bibliographic database that is available to library users in more than 10,000 libraries in North America and Europe.

The libraries at the Garden and The New York Botanical Garden are recognized as two of the strongest botanical collections in the United States. OCLC will fully automate the information held in the two libraries, and also will be compatible with TROPICOS, the research database system developed at the Garden and used by scientists worldwide. (See the *Bulletin*, March-April 1990.)

Monsanto Unveils Biotechnology Exhibit at the Garden

On March 20 a new exhibit kiosk was unveiled in the Ridgway Center. The exhibit, sponsored by Monsanto Company, displays living specimens of genetically engineered crop plants for the first time outside research laboratories or field test locations. It allows visitors to the Garden to see firsthand one of the most promising applications of the science of biotechnology to plant agriculture. The plants being displayed, Russet Burbank potatoes, have been genetically improved to resist virus infection.

The initial breakthrough in plant virus resistance was achieved jointly by local scientists at Washington University and Monsanto. This and other advances in molecular biology have now made it possible to develop plants that protect themselves against disease, pests and stress and will eventually lead to more abundant food of higher quality and better nutritional value.

Speaking at the ceremony were Dr. Ernest G. Jaworski, director of Biological Sciences, Monsanto Corporate Research; and Dr. Peter H. Raven, director of the Garden. "We are absolutely delighted to have this marvelous exhibit here at the Garden," said Raven. "This valuable research is extraordinarily important, and it is critical for us all to understand its applications."

WE'LL SHOW YOU, ST. LOUIS!
5
KSDK

KING SCHOENFELD

Bob Richards (center) leads a workshop.

KSDK Presents "Every Day Is Earth Day"

On Saturday, April 28, nearly 5,000 visitors brought trash to the Garden. A recycling center in the parking lot collected the trash as everyone participated in "Every Day Is Earth Day," co-sponsored by KSDK-Channel 5, Dierbergs Markets and Cash's Scrap Metal and Iron. In the Ridgway Center approximately 680 children took part in KSDK's "Make It and Take It" workshop with meteorologists Bob Richards and John Fuller. Children made sundials and learned about weather forecasting and precautions to take in severe weather. Everyone had an opportunity to discuss environmental issues with Richards and Fuller.

PBS Special Is Filmed

A film crew from WQED-TV in Pittsburgh, a prominent PBS station, was in St. Louis March 28-30 to film Dr. Raven at work, the Garden grounds, and the Climatron ribbon-cutting ceremony. The crew filmed Dr. Raven and Dr. Peter Hoch working with Onagraceae plants in the research greenhouses. The footage will be included in a special, "A World of Plants," being produced for Japanese television. WQED will produce its own special to air nationwide in spring 1991. WQED also produces "Mr. Roger's Neighborhood" and "Eyes on the Prize" for PBS.

KING SCHOENFELD

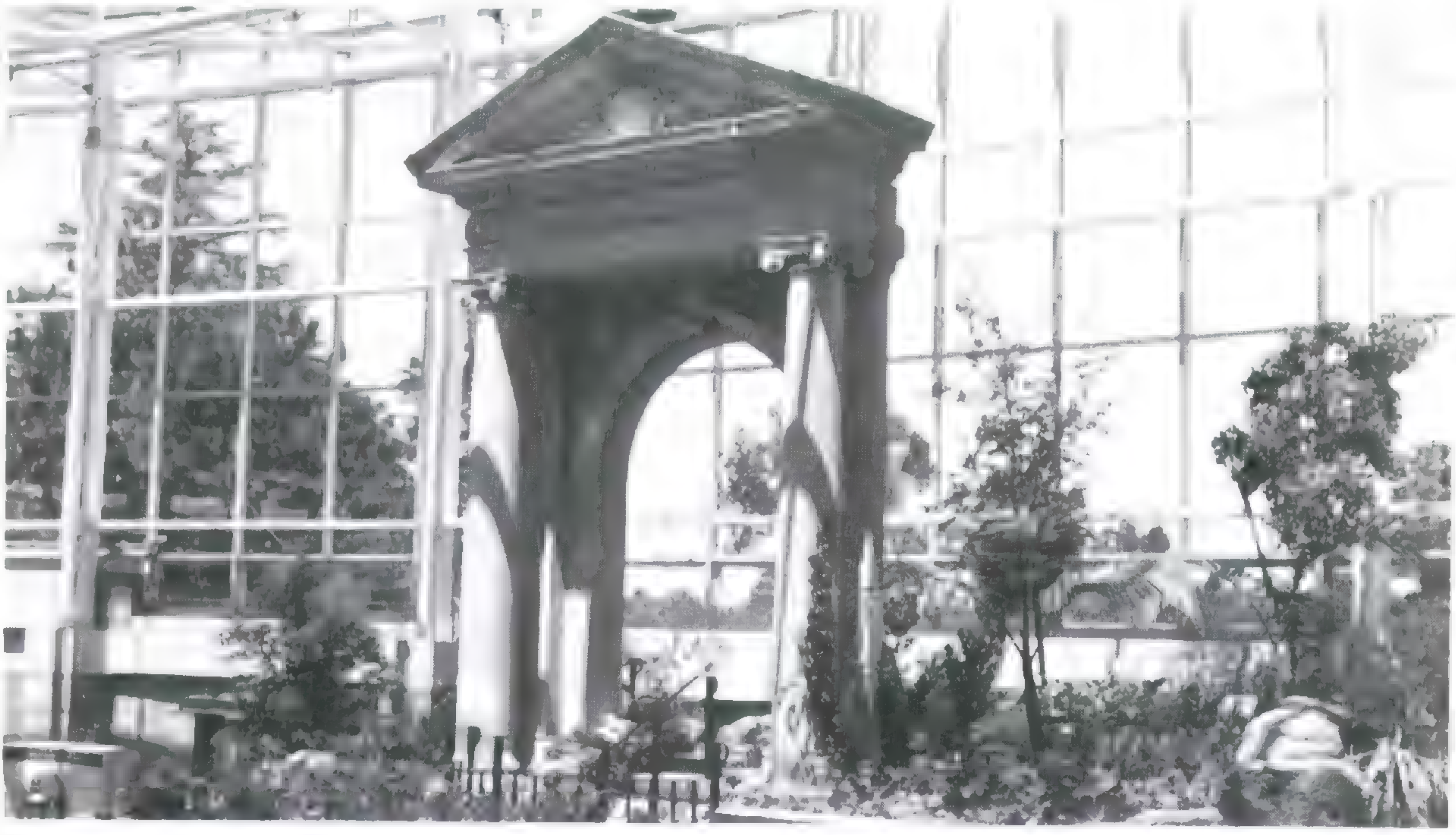
DAYLILIES ARE IN BLOOM: Be sure to visit the G. Stuart Jenkins Daylily Garden on the east side of the Garden this summer. This colorful display, dedicated in 1988, has matured into one of the finest exhibits of daylilies in the area. The garden was the generous gift of Mrs. Ada Jenkins Kling, in memory of her late husband.

The exhibit will feature a nine-foot long floral centerpiece "Flowers of All Nations," pictured here with Mrs. Helen F. Boehm. It is the largest floral sculpture ever created in porcelain.

Boehm Porcelain Studio Honors Spink Gallery

In honor of the 500,000th visitor to the Spink Gallery in the Ridgway Center, the Boehm Porcelain Studios of Trenton, New Jersey, and Malvern, England, will display 40 floral sculptures at the Garden, August 4-19, 1990. The Spink Gallery houses a magnificent collection of more than 100 hand-sculpted porcelain pieces from the Boehm Studios, as well as works by other artists. Edith and C. C. Johnson Spink, Garden Trustee emeritus, presented the collection to the Garden in 1982, and donated the Spink Gallery in memory of Blanche and Taylor Spink.

1990 is the 40th anniversary year of the internationally renowned Boehm Studios. Boehm works are in the collections of 127 institutions, including The White House, the Metropolitan Museum of Art, Buckingham Palace, and the Vatican.



L. A. KELLY

Temperate House Portico

Centerpiece of the new Shoenberg Temperate House, the stone portico pictured above was built in 1902 as the entrance facade to St. Leo's Catholic School on Mullanphy Street in St. Louis. When the school was razed in 1978, Saint Louis Architectural Art Company salvaged the facade.

The school was designed by the firm of Barnett, Haynes and Barnett. The Barnetts were sons of George I. Barnett, who was Henry Shaw's architect for Tower Grove House, the Townhouse, Museum, Linnean House, Gate House, and the mausoleums.

The new Shoenberg Temperate House was designed by The Christner Partnership, a St. Louis architecture firm.

Garden Gate Shop

Celebrate the Japanese Festival

August 25-September 3

The theme of this year's Japanese Festival is "Seeing Japan." You will certainly see it in the Shop, which will feature a large assortment of Japanese delights including Japanese figurines, tee shirts, bonsai, ikebana arrangers, kites, books, origami, desktop Zen gardens and much more. Stop by during the festival and take home a gift from Japan.

Gifts for the Environment

The Shop continues to expand its selection of natural products for home gardening including compost makers, fertilizers, grass recycling kits, and insect control aids. You will also find a wonderful selection of statuary, garden accessories, and wall plaques to enhance your home landscape.

Sunglitter Returns

***Sunglitter*, the bronze fountain statue by Carl Milles, was reinstalled in the water lily pools in late April. The piece was removed in late March for cleaning to correct streaking in the patina. Conservators applied a protective coating that should correct the problem, and also performed some routine maintenance on the other Milles bronzes.**

Moving? Please Remember To Send Us Your New Address.

To avoid missing any of your membership mailings, you *must* give us your new address at least three weeks *before* you move. Please enclose the mailing label on the back cover of this *Bulletin*, and mail to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

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continued on next page

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PATRICK WATSON

16TH ANNUAL

JAPANESE FESTIVAL

AUGUST 25 — SEPTEMBER 3, 1990

The Garden's celebration of International Month culminates with the 16th annual Japanese Festival. The 1990 festival theme is ''Seeing Japan,'' offering visitors a look at various aspects of Japanese culture. The traditional Candlelight Walks will be featured again this year. Daily activities include:

- **MONDAY, August 27**—Travelogues and travel tips
- **TUESDAY, August 28**—Arts and crafts take center stage.
- **WEDNESDAY, August 29**—Japanese gardening is featured.
- **THURSDAY, August 30** Spotlight on the visual and performing arts.
- **FRIDAY, August 31**—The popular Children's Day returns.
- **WEEKENDS** Taiko drummers, storytelling, arts and crafts, and more.

A complete list of events will be available early in August. Admission to the Japanese Festival is free to Garden members, $3 for adult non-members, and $1 for senior citizens and children age 12 and under. Some activities and workshops will have individual admission fees.

FESTIVAL HOTLINE open Monday, August 20. Call (314) 577-5198.

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NUMBER FIVE

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On the cover: Water lilies are a blaze of color at the Garden in the autumn.
—Photo by King Schoenfeld

1990 Missouri Botanical Garden.

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The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $40 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

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Comment

A Busy Season Ahead

The Japanese Festival has become a wonderful tradition and this year's ten day program is filled with activities and performances that will help members and visitors better understand Japanese culture and tradition. "Seeing Japan," the 16th festival presented at the Garden, is sponsored for the fifth year by the Fannie May Candies Foundation. We extend our grateful appreciation to the Foundation for its generous support of the festival.

The Garden encourages all members to visit during the *National Geographic* Exhibit, which will return to Monsanto Hall in the Ridgway Center on September 12. James P. Blair, the *National Geographic* photographer responsible for the photography in the August 1990 article about the Garden, will lecture on his experiences and travels documenting forest destruction for the *National Geographic*. I hope you will join us for one of his presentations (See next page). The August issue of *National Geographic* is available in the Garden Gate Shop.

In order to better present the information to everyone about the importance of the rain forest, a new exhibit has been installed in the Brookings Interpretive Center on the Tropics. "What You Can Do" provides visitors to the Brookings Interpretive Center lists of specific things they can do to improve the environment for future generations. (For further information, see page 15.)

During September and October, the Trustees and other dedicated volunteers begin their solicitation efforts for the Annual Giving Campaign. Without a higher level of tax support, it is extremely difficult for the Garden to carry out its mission of informing people about the critical role that plants play in our environment, and the devastating impact of the destruction of the rain forest. When you are contacted about an annual gift, I hope you will be willing to listen and consider a donation to this annual appeal.

My best to you and my thanks for your dedicated commitment to the Garden.

Peter H. Raven

L. A. KELLY

HENRY HITCHCOCK RECEIVES HENRY SHAW MEDAL—At the June 20, 1990 meeting of the Garden's Board of Trustees, the Henry Shaw Medal was presented to Henry Hitchcock, Trustee Emeritus. Mr. Hitchcock was honored for his service as president of the Board from 1962 to 1967, and as acting director of the Garden from 1963 to 1965. He was awarded the Medal at the 1989 Henry Shaw Dinner (see the Bulletin, *March-April 1990) which he was unable to attend. He is pictured here with Robert Kresko (left), current president of the Board.*

JAMES P. BLAIR © NATIONAL GEOGRAPHIC SOCIETY

"THE PLANT HUNTERS"

National Geographic Photographer To Lecture on Crisis of Deforestation

James P. Blair, photographer for *National Geographic* Magazine, will visit the Garden September 12-14, 1990, to lecture about his work on "The Plant Hunters: A Portrait of the Missouri Botanical Garden," which appeared in the August 1990 issue of *National Geographic*. The exhibit also was displayed during July.

Mr. Blair's slide lecture will range beyond his work on "The Plant Hunters" to his experiences around the globe. "In 1981 I heard Peter Raven speak in Washington, D.C., on the crisis of deforestation and the loss of genetic diversity facing our planet. At that time I had only an average awareness of the magnitude of the problem, which is to say, not great. Peter Raven seemed to be a single voice in the wilderness, and his talk was an inspiration.

"In recent years I have been fortunate to be assigned by *National Geographic* to photograph stories dealing with deforestation all over the world, first in 1983 in the tropics, then "The Plant Hunters," and just this year I photographed the destruction in the evergreen forests of the Pacific Northwest for the September 1990 issue.

"I have come to an appreciation of the complexity and incredible beauty of the Earth's northern and southern forests, and I am dismayed by their rapid disappearance. I applaud the work of the Missouri Botanical Garden, and hope that a way can be found to reverse the trend toward extinction."

Mr. Blair will present his lecture twice on Wednesday, September 12, for members only. There will be a reception in his honor that evening. The lecture will be open to the public on Friday, September 14. See *Calendar of Events*, page 12, for details.

"About one-quarter of all biological diversity in the world—more than a million species—will likely vanish in the next quarter century. No extinction episode of this magnitude has occurred during the past 65 million years. The great majority of these species, and their potential for humanity, will disappear unknown."

—Peter H. Raven

MISSOURI BOTAN
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GARDEN LIBRARY

(Left to right): Yuri Gorbunov; Marshall Crosby, assistant director of the Garden; Mamiya Gogolishvili; Isa Baitulin; Pulat Zakirov.

RICHARD BENKOF

Garden Welcomes Distinguished Visitors

This summer the Garden hosted a number of visitors from around the world.

RICHARD BENKOF

Gregory Long (left) and Peter Raven

Scientists from the U.S.S.R

As part of an ongoing bilateral botanical exchange program, four prominent Soviet botanists were the guests of the Garden for an entire week. The four scientists, Isa Baitulin, president of the Kazakhstan Academy of Sciences in Alma-Ata; Mamiya A. Gogolishvili, director of the Central Botanical Garden of the Georgian Academy of Sciences in Tbilisi; Pulat K. Zakirov, director of the Central Botanical Garden of the Uzbekistan Academy of Sciences in Tashkent; and Yuri Gorbunov, head of the Department of Cultivated Plants of the Main Botanical Garden of the U.S.S.R. Academy of Sciences in Moscow, explored their interests in greenhouse facilities and the breeding and improvement of cultivated plants. They talked with Garden staff members to learn more about the Garden's horticultural and research programs. They also toured Monsanto Company's biotechnology facilities and Stark Brothers Nursery in Louisiana, Missouri.

Head of The New York Botanical Garden

Gregory Long, the president of The New York Botanical Garden, visited the Garden July 24 and 25 to meet with a variety of Garden personnel to discuss programs and administrative policies of mutual interest.

Botanists from Japan

Three botanists from Japan, Akira Hiratsuka of Tokohu University, and Hiroshi Kudo and Hiroshige Koyama both of Kyoto University, visited the Garden July 24 and 25 as part of a plant collecting expedition to the Midwest. The botanists were particularly interested in the Asteraceae, or sunflower, plant family. Koyama, the group's leader, is considered one of the leading botanists in Japan.

Swiss Botanist Visits Garden

Rodolphe Spichiger, director of the Conservatoire et Jardin Botaniques, Geneva, Switzerland, visited the Garden in June, 1990 to discuss various joint projects with the Garden's research staff. The Missouri Botanical Garden and the Conservatoire have cooperated for many years in the production of the *Flora del Paraguay* and look forward to developing programs of jointly computerizing botanical information. Dr. Spichiger addressed the Board of Trustees at their June 20 meeting.

Mario Sousa and Gloria Andrade

Mario S. Sousa, a senior research botanist at the Universidad Nacional Autónoma de México and a research associate of the Garden, is spending a nine-month sabbatical in St. Louis under the sponsorship of the Noyes Foundation. Prof. Sousa, along with Gerrit Davidse of the Garden and A.O. Chater of the Natural History Museum, London, is a co-editor of the *Flora Mesoamericana* project. This Flora will catalogue and describe all the native and important introduced plants of Mesoamerica, which includes all Central American countries and the five southernmost tropical states of Mexico.

While in St. Louis, Prof. Sousa, who is an internationally recognized expert on the Fabaceae (legume or bean family), will write a number of generic treatments for the Flora, and edit taxonomic accounts of other families that are included in earlier volumes of the Flora. Prof. Sousa is accompanied by his wife Gloria Andrade, also a botanist and specialist on the Fabaceae, and their two children. Gloria is contributing a number of generic accounts for the Flora.

Armen and Alice Takhtajan

Dr. Armen Takhtajan, regarded as the dean of Soviet botanists, is in residence here at the Garden through January 1991 with his wife, Alice. Dr. Takhtajan is Armenian by birth, and is an advisor at the Komarov Botanical Institute of the Academy of Science of the U.S.S.R. in Leningrad. He has written widely on morphology, evolutionary classification, and phytogeography. He is working on a book during his stay at the Garden.

Dr. Takhtajan is a member of the Academy of the Science of the U.S.S.R.; a member of the Armenian Academy of Sciences; a foreign member of the National Academy of Sciences, Washington, DC; Finnish Academy of Sciences; Norwegian Academy of Sciences; Polish Academy of Sciences; German Academy Leopoldina; a Fellow member of the Linnean Society of London; President of the All-Union Botanical Society; and from 1975 to 1981 was President of the International Association for Plant Taxonomy.

The Takhtajans also visited the Garden for several months in 1988-89.

The Takhtajans and the Sousas were honored together with Gregory Long and the Soviet and Japanese visitors at a dinner at the Garden July 24, 1990.

RICHARD BENKOF

(Left to right): Hiroshige Koyama; Akira Hiratsuka; Hiroshi Kudo; Peter Hoch, MBG research division.

L. A. KELLY

Rodolphe Spichiger

RICHARD BENKOF

Gloria Andrade and Mario Sousa

RICHARD BENKOF

Alice and Armen Takhtajan

What Happened to Henry Shaw's Trees?

by Eldridge Lovelace, *FASLA, President, Board of Commissioners of Tower Grove Park*

WHEN Henry Shaw gave Tower Grove Park to the City of St. Louis in 1868, the 285 acres contained only three trees. Like other land in the vicinity, including that now constituting the Missouri Botanical Garden, it was a prairie and was used as pastureland. With the assistance of James Gurney, who had come to St. Louis from Kew Gardens, Mr. Shaw set about planting the Park and the Garden. A nursery was started and seeds and cuttings were brought from far and near. Shaw wanted Tower Grove Park to contain a grove of every variety of tree that would grow in St. Louis.

Always meticulous and well organized, Shaw made lists of these plants. He counted those in the nursery and we have his inventory of the nursery made in 1870. The construction and planting of the Park took 15 years. In 1883, the Board of Commissioners published a report reviewing the work that had been done, and this report included a list of the varieties that had been planted. Shaw was a real believer in diversity, and 200 varieties are included in the two lists. Some 15,000 individual specimens had been planted by 1883, a truly remarkable achievement.

In 1978 a detailed inventory of plants in Tower Grove Park was made. Using low-altitude aerial photographs, each specimen was located and identified, with frequent assistance from the staff of the Garden. In 1987 the Garden completed a similar inventory of its grounds.

In the 122 years since Henry Shaw started work on Tower Grove Park, much has happened. There has been severe air pollution; some of us remember the St. Louis "smoke." There have been droughts and tornadoes. Many of the trees and shrubs planted by Shaw were short-lived, designed for a quick effect, and when these died they were not replaced by the same variety. Others that he planted were not suited to our climate, something neither he nor James Gurney could have known in advance. Very few plants could be expected to live for 120 years, anyway, although we think that about 180 specimens that Henry Shaw planted in the park are still living.

Hampered by the severe environmental problems and limited finances, the Board of Commissioners by around 1920 had abandoned Shaw's notion of having a grove of every kind of tree that would grow in the Park. Instead, any plant that would live was welcomed, and those that died were replaced by whatever plant was available at a modest price or that suited the taste of the person then in charge of the Park.

MISSOURI BOTANICAL GARDEN ARCHIVES

The "Ruins" in Tower Grove Park, photographed in 1966, before restoration.

Tower Grove Park was recently named a National Historic Landmark, becoming one of only four urban parks in the nation to be so designated. There will be a celebration at the Park on Sunday, September 23, noon to 5 p.m. The festivities will include special recognition of the "Henry Shaw Trees" still remaining in the Park.

Over the past century botany has made great strides, including renaming many plants. Sometimes a name changed several times. Dr. Nancy Morin of the Garden undertook the task of bringing the scientific names of Henry Shaw's era up-to-date, an essential step in learning what happened to those that he had planted.

Remarkably, one half of the 200 varieties that Henry Shaw planted were still here, growing in either the Park or the Garden. And since the Board began the reforestation program in the Park in 1982, 35 varieties have been reintroduced. In 1989, one hundred years after Shaw's death, only 65 of those he listed were missing.

The Board of Commissioners of Tower Grove Park proposes to develop a controlled collection of woody plants in the Park which could eventually amount to about 600 varieties and 16,000 specimens. This project would be carried out in cooperation with the Garden, whose director by state law is on the Park's Board. The Park has resurrected Henry Shaw's proposal of a grove of every kind of tree that will grow here, to be arranged as far as possible in the park's original Victorian gardenesque style, enabling the best possible display of specimens and varieties through harmonious contrasts of color, texture, size, and shape. The Park has and will continue to consult closely with the Garden on these matters.

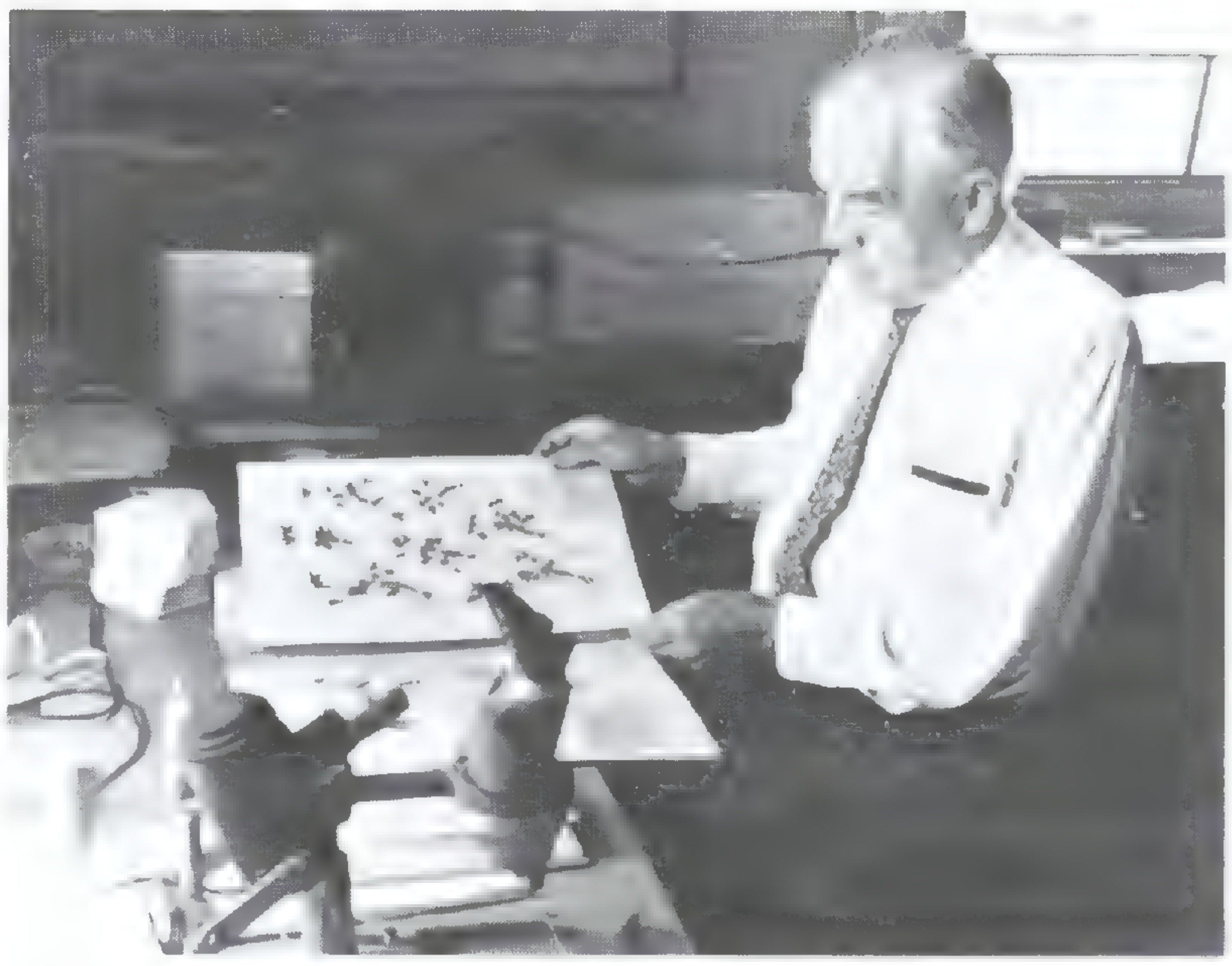
Tower Grove Park in 1978 contained 7,250 trees. For various reasons, including the maturity of the collection, the Park is losing between 150 and 200 trees a year. This is not surprising; if each tree

continued on next page

Frits Warmolt Went

1903-1990

Frits W. Went, who St. Louisans will remember longest for the Climatron he developed while director of the Garden, died on May 1, 1990 just short of his 87th birthday. As fourth Director of the Missouri Botanical Garden, he came to St. Louis with outstanding qualifications for the job. Born in Utrecht, The Netherlands, on May 18, 1903, where his father was the Professor of Botany and director of the Botanical Garden of The University of Utrecht, he grew up in a botanical garden. The love of flowers and the ability to ask critical questions about their growth was something that never left him.



Frits Went in his office at the Garden.

MISSOURI BOTANICAL GARDEN ARCHIVES

His botanical studies at Utrecht culminated in 1927 with a doctorate from research on the precise measurement of effects of plant growth substances. Immediately, he was to become a world famous plant physiologist for these insightful studies. The next five years were spent as plant physiologist at the Royal Botanical Garden of Buitenzorg, Java (now Bogar, West Jakarta, Indonesia). There he developed a lasting interest in tropical vegetation and tropical plant growth requirements. In 1933 he moved to the California Institute of Technology where he developed a facility having rooms in which temperature, light, and humidity could be precisely controlled and varied. This building, called the Phytotron, made possible studies of requirements for optional growth and development of many different plants. Frits Went's analytical and questioning mind facilitated rewarding experiments and observations in the Phytotron, the greenhouse, the deserts and the tropics. He was one of the few botanists with a broad view of plant science that also included practical aspects.

Always searching for new challenges, Professor Went, by then world renowned and sought for by many national and international boards and committees, accepted the offer to be director of the Missouri Botanical Garden in 1958. He was more than up to the challenges of rebuilding an aging garden with needs for modernization. Through his vision, enthusiasm, and love of plants, he was able to motivate others to pitch in and help in the rebuilding. The Climatron, a unique concept for a large greenhouse with different climates under one dome, was the most visible and noted product of his five years as director. It was a symbol of the new Missouri Botanical Garden which again, as in the past, would be a leader in innovation. Less visible, but equally important, was Dr. Went's upgrading of many public service activities such as instructional programs and community support networks. With his wife, Catherina, Frits Went made a difference in St. Louis during their short stay. Disappointed with the slow progress of some of his projects, including the building of a new science center for the Garden, Went resigned his directorship in 1963 to devote full-time to teaching at Washington University and shortly after left to direct the Desert Research Institute's Biological Science Center at the University of Nevada, Reno.

Many honors came to Dr. Went including five honorary doctoral degrees and election to a number of scientific honorary societies, including the National Academy of Science. His legacy for St. Louis was the setting of the Missouri Botanical Garden on a new track that again made it a world leader in botanical and horticultural innovation. Keen vision and unwavering direction were his hallmarks, and those he touched were changed.

—Emanuel D. Rudolph

EDITOR'S NOTE: Frits Went received the Henry Shaw Medal in January, 1990. (See the *Bulletin*, March-April 1990.) Prof. Rudolph is writing a book on the history of the Missouri Botanical Garden.

TREES continued

lived 100 years we would lose 70 to 75 per year. The Board of Commissioners has determined that it would like to have at least 15 specimens of each variety and, to obtain the greatest diversity, not more than 75 trees of any single species. The upper limit may be waived for signature trees of the Park such as the ginkgo and the bald cypress, now represented by many more than 75 specimens each.

The current collection presents certain problems. The estimated 180 specimens that were planted during Shaw's lifetime need special care, which they are not receiving due to lack of funds. Also, of the large deciduous trees (about 5,500), almost half are soft maples, pin oaks or sweet gums, about 700 specimens of each. Of the 500 small or ornamental trees, two-fifths are hawthorns, and of the 800 evergreens, almost two-thirds are Austrian pines. As these die, many will be replaced by different varieties. The trees are the greatest asset of Tower Grove Park and no live tree will be removed until it is on its last legs, or becomes a real hazard.

The Tower Grove Park reforestation program must be financed by public contributions. While the first priority is the replacement of the missing 65 varieties planted by Henry Shaw, the program is flexible and donors are allowed personal selections so long as they fit into the scheme of things. A detailed planting scheme is an early priority.

Tower Grove is the best preserved Victorian park in the United States. As the plant collection is improved to represent more of what Henry Shaw had in mind, the Park can grow in value as a unique treasure. Such a large and splendid example of the Victorian gardenesque landscape style cannot be found in any other location. The Board of Commissioners is grateful for the encouragement and support of the Missouri Botanical Garden, and looks forward to making further progress together.

Home Gardening

Backyard Conservation

When I worked as a teaching assistant for an undergraduate taxonomy course one year, it was common for the class to take field trips to various parts of the state to study the flora. The students were required to collect and mount 100 different plants and provide a full identification of each. On one of the trips, we cautioned the students not to collect a certain peony because it was quite rare. It existed in only two or three locations in the region, and was considered endangered. To my disgust I found the peony in one student's collection at the end of the term. There are no "innocent" mistakes in face of the risk of extinction. The student got a "D."

THE RISK OF EXTINCTION

The issue of extinction is also valid for gardeners. In the U.S. alone, over 400 native plant species are listed as endangered. Planting native plants, especially wildflowers, is becoming a big craze in the horticulture trade. Unfortunately many of the plants offered for sale are not grown at the nursery, but are collected from natural populations.

How much collecting can be permitted before we affect the ability of plant populations to regenerate? Over-collecting and habitat destruction have already affected populations of crested irises and terrestrial orchids in Michigan, western lilies from the Pacific Northwest, and carnivorous plants from southeastern coastal areas.

Collectors sell to buyers who supply the nursery retailers. Plants are then marketed to gardeners through nurseries or the numerous mail order catalogs that you may receive each season. A recent survey conducted by the National Resources Defense Council (NRDC) found that over 600 species of North American wildflowers were offered for sale by U.S. nurseries. Plants featured in mail order catalogs often include wildflower roots, bulbs or corms packaged in plastic with a colorful picture of the plant printed on cardboard. Of the plants offered for sale, several popular ones are commonly collected from natural populations, including the pink lady slipper orchid (*Cypripedium acaule*) and snow trillium (*Trillium grandiflorum*).

PURCHASE CAREFULLY

As gardeners, we must all make every effort to avoid purchasing wild collected plants. Read catalogues and advertisements carefully. Plants listed as cultivars are safe because these plants are bred and propagated for domestic use. Buy only nursery propagated plants. If your nursery cannot say "yes" to the question "are these plants nursery propagated?" then you should decline to buy them. Getting an answer from mail order sources may be more difficult.

You will commonly find catalogues that describe their plants as "nursery grown." This does not necessarily mean that these plants have been propagated and grown to salable size at the nursery. It can mean that the plants were dug from native stands and merely repotted at the nursery. Other terms like "field grown" or "container grown" can give the same confusing impression.

Many nurseries do propagate native plants and are very happy for gardeners to know it. Any source that states its stock is propagated from seed, cuttings, or division can assure you that they acknowledge the problems of collecting wild plants.

THREATENED SPECIES

Ultimately, the best bet is to become familiar with those plants that are typically wild collected. Terrestrial native orchids (*Cypripedium* species), hardy ferns, and most trilliums (*Trillium* species) are good examples. In these cases, few nurseries are producing commercially propagated plants because they are so slow to grow and therefore are not very economical to produce. Seeds of *Trillium grandiflorum* normally take about two years to germinate. That means a salable plant would not be ready for three to five years. The cost of such a plant would be well beyond the means of the average gardener. Likewise, ferns can be produced from spores, but several years are required to obtain a decent sized plant. Unavoidably, ferns produced from spores are expensive.

Some native wildflowers, especially from the eastern U.S., are often dug and marketed through mass merchandisers. Included here are jack-in-the-pulpits (*Armisaema* species), Dutchmen's breeches (*Dicentra cuculcularia*), crested iris (*Iris cristata*), bloodroot (*Sanquinaria canadensis*), wild gingers (*Asarum* species), Virginia bluebells (*Mertinsia virginica*), hepaticas (*Hepatica* species), shooting stars (*Dodecathon*), and trout lilies (*Erythronium* species). You should inquire about the source when buying any of these. In general, if the species above are not expensive, chances are the plants were wild collected. It is not unusual to see bargain basement prices for bulk orders, with single bulbs priced at less than one dollar.

BE AN INFORMED BUYER

Mail order companies often show a pretty picture and give a lavish description of the plant. What is left out is the scientific name of the plant, or perhaps only the genus is given. If you buy by mail order, make sure that the plants are completely identified, or you will never be sure of what you are purchasing. The photograph may not tell the whole story. On an even more pragmatic level, note that the survival rate for wild collected

plants is poor. One source estimates that less than a third of the wildflower plants taken from their natural habitats actually live under garden cultivation.

Several prominent national plant retailers are now taking a stand on the issue of wild collected plants and are refusing to sell any species that have traditionally been associated with the "dug and sold" business. The New England Wild Flower Society (Hememway Road, Framingham, MA 01701) has published a guide called the "Nursery Sources of Native Plants and Wildflowers" which includes many native species and their propagators. This is a good reference source to consult before buying so that you are sure of obtaining propagated materials.

COLLECTING ABROAD

In countries other than the United States, collection and depletion of wild populations of plants have gone on for years. Bulbous plants in the iris, amaryllis and tulip families have long been prime targets for collecting. Of the ten billion bulbs sold annually, about five million are harvested in the wild. Each year, tons of Mediterranean bulbs from Turkey, Portugal and Spain are dug and exported.

Holland has been a principal importer of foreign bulbs. These are then exported to other markets primarily in the U.S., Great Britain and West Germany. At present, however, over 95 percent of the bulbs exported from the Netherlands are truly propagated there.

A popular group of plants called snowdrops (*Galanthus*), noted for being one of the earliest spring flowers, has been extensively harvested from wild populations in Turkey. Now, with the exception of the commonly cultivated *G. nivalis*, all collections of snowdrops are under governmental control. The U.S. alone was reported to import around four million bulbs in the late 1980s. Other popular plant genera which are essentially overcollected and imported include *Cyclamen, Eranthis, Leucojum, Narcissus*, and *Sternbergia*. Pressure by the NRDC, the World Wildlife Fund and the Garden Club of America as well as British environmental organizations has recently led to an historic agreement with the Dutch bulb industry. Beginning in 1990, all bulbs sold by the Netherlands that are harvested from the wild will be marked "Bulbs from Wild Source." By 1995 all bulbs from the Netherlands will be labeled to show consumers their origin, whether wild collected or cultivated.

This is good news for the gardener as well as all concerned about preservation of wild populations. The action by the Dutch should pave the way to encouraging conservation efforts elsewhere. You can help by refusing to purchase or create a demand for wild collected plants, and by paying a little extra for those hard-to-propagate plants that cost more to produce. This fall when you prepare your beds for planting and begin planning your garden, dig a little deeper.

—Steven D. Cline, Ph.D.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at ***577-5143.***

September Tips

- Fertilize strawberries now for better yields next spring. Use a 12-12-12 fertilizer at a rate of about one pound per 100 square feet. Weed the patch first.

- Houseplants summering outdoors should be gradually moved inside about mid-month. Plants that have grown overly large may be pruned back at this time. Thoroughly inspect each plant for insect pests and treat these problems before the plants are moved indoors.

- Peonies may be lifted and divided now. To ensure proper bloom, prepare the planting site with a generous amount of compost or well rotted manure. Choose only sunny sites and be sure to replant so the growth 'eyes' are just barely below finished grade. Remove all dead foliage for disease and insect control.

- Hardy spring bulbs can be planted any time until the ground freezes. Keep tulips refrigerated until the soil cools in late October.

- Late September is an ideal time to plant evergreen conifers. Water as needed to prevent wilting, and apply a mulch to keep down weeds and provide an even amount of moisture.

- Stop fertilizing mums or blooming may be delayed.

- Renovate old lawns, or seed new lawns, now through mid-October. Mow, dethatch, kill off all weeds using a selective weed killer, aerate, power rake, apply a starter fertilizer and overseed. Seed will have to be kept moist until the germination process begins.

October Tips

- The average first killing frost for the St. Louis area normally falls between October 15 and 20.

- Be sure to harvest tender crops such as peppers and tomatoes before frost. Chop and freeze peppers for winter use. Tomato vines with large, green fruits can be pulled, roots and all, and hung upside down in a frost-free area. The fruits will slowly ripen over the next several weeks.

- Any perennials that were not planted in September may still be done now.

- Deciduous trees and shrubs may be transplanted after their leaves fall. Do not fertilize newly planted trees and shrubs.

- Established trees and shrubs can be dormant fertilized anytime after leaves turn color or drop. Dormant pruning can also be done starting at this time.

- Keep leaves mowed or raked off lawns to keep from smothering turf. Every effort should be made to stockpile large amounts of autumn leaves for composting.

- Spread any available organic matter on garden beds that will be tilled before winter. Sow cover crops such as wheat or rye after tilling. These will be turned under next spring and are an excellent way of improving garden soils over winter.

- Rabbit and rodent guards made from 1/4 inch mesh hardware cloth should be placed around the trunks of fruit and other young trees to prevent gnawing damage during winter.

—Chip Tynan, The Answer Service

USDA Publishes New Hardiness Zone Map for Plants

BY CHIP TYNAN, *The Answer Service*

GARDENERS have always struggled to choose plants that will thrive in their local climate. Fluctuations in weather and temperature make it difficult to make appropriate selections, even with accurate data on plants' tolerances. Fortunately, help is at hand.

Earlier this year, the United States Department of Agriculture (USDA) released its long anticipated revision of the old USDA Plant Hardiness Zone Map. Published in 1960 and revised in 1965, the old map divided the country into ten distinct climatic zones based on average minimum temperatures. The old map was an inflexible chart that left gardeners in transition areas straddling the fence making difficult plant choices. Changes in moisture patterns and fluctuating temperature extremes in recent decades made it apparent that alterations in the zone map were necessary.

At the request of a committee from the Garden Writers of America, the massive undertaking to revise and update the map was begun. From the early 1970s to the late 1980s data was compiled on computers, using information gathered from 14,500 weather stations in the United States, Canada and Mexico.

The end result is actually two interpretations of the same map. A basic version was originally published in the *National Arboretum Book of Outstanding Plants* by Jacqueline Heriteau with Dr. H. Mark Cathey and his U.S. National Arboretum staff and consultants. This version redivides Canada, America and Mexico into 11 distinct zones that are based on 10 degree Fahrenheit variations in average annual minimum temperatures. The newly created Zone 11 represents areas that stay essentially frost free with temperatures above 40° F.

The second version of the map, which covers only the lower 48 states of the U.S., shows considerably more detail, dividing each state down to the county level. It further divides each zone into A and B designations, with the A zones 5° F cooler than the B zones. On a local level, the majority of central Missouri, including most of the counties immediately south and west of St. Louis City, lie within zone 5B, which is characterized by average minimum temperatures between –10° to –15° F. St. Louis City, most of St. Louis County, and virtually all of the Illinois counties just east and south of the city area are located in hardiness zone 6A. In this zone, the average minimum temperatures rarely fall below -5° to -10° F. These values represent an approximate 5° F drop in our average minimum temperatures in the interval since the previous Hardiness Zone Map was published.

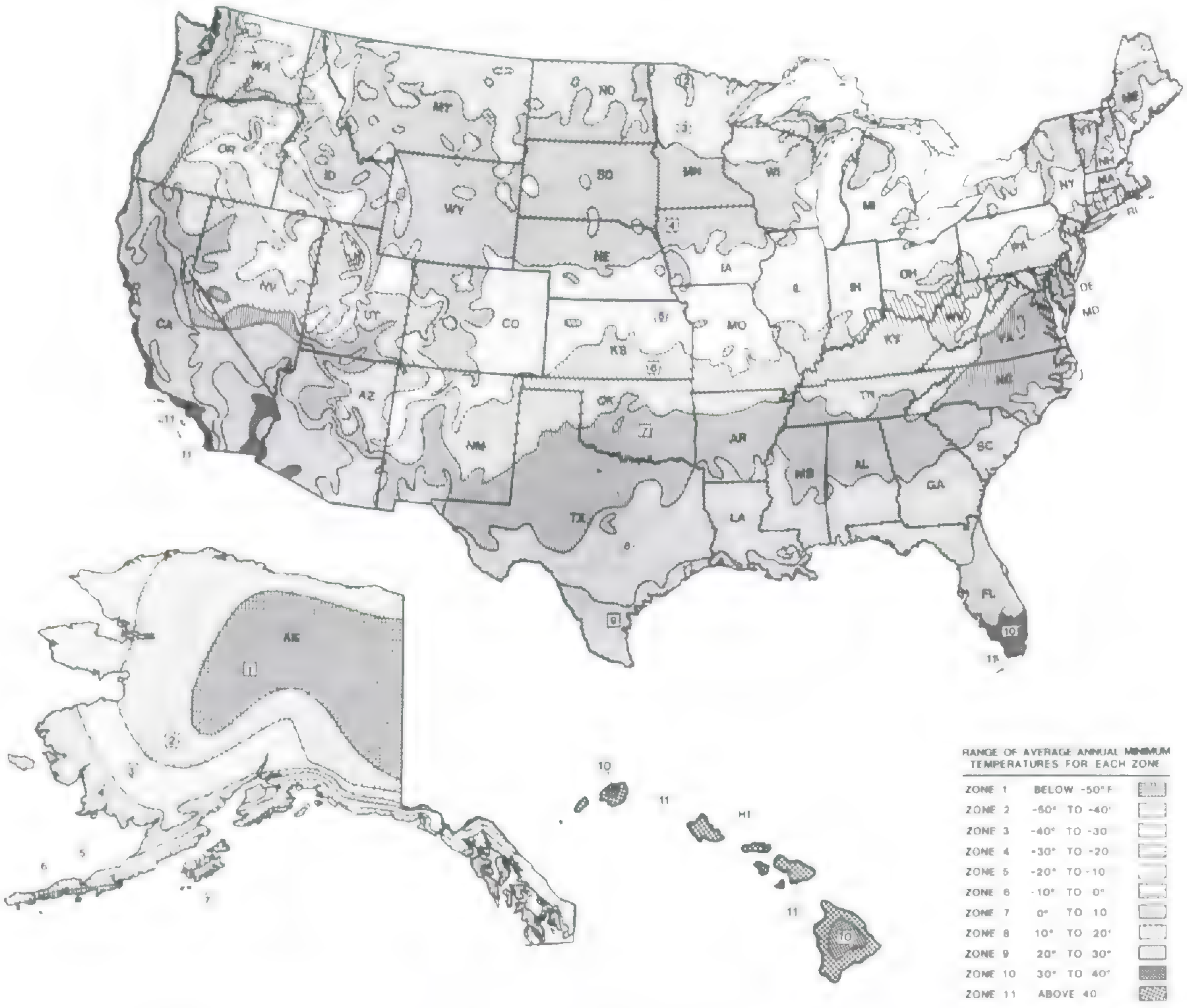
Local gardeners have long been heard to say that it seems to get five to ten degrees cooler out in the country than it does in the city. There is no doubt that all of the glass, pavement, brick and concrete in the city has a modifying effect on our weather extremes. Readers of the map will notice that many urban areas carry warmer designations than the surrounding regions.

An interesting characteristic of the St. Louis winter of 1989-90 is illustrated by the fact that the temperatures during the cold spell in mid-December fell far below the average minimum temperatures for our entire region. Yet, excluding that one icy blast, the winter as a whole was generally mild, with unseasonable warm spells and untimely frosts.

In addition to cold, many other elements also affect the hardiness of plants. Tolerance of heat and humidity, site location, soil types and cultural practices are just a few of the factors that determine true survivability. If extreme weather fluctuations become the norm rather than the exception, plants will have to be versatile enough to withstand all the unseasonable hands that may be dealt by Mother Nature.

It would be interesting for subsequent map revisions to include expanded climatic information beyond average minimum temperatures. For the present, however, the new Hardiness Zone Map is an accurate and valuable tool to help guide gardeners through the difficult task of making the right plant choices.

The four-foot-by-four-foot USDA "Plant Hardiness Zone Map" No. 1475, which includes both the simplified and the detailed versions of the map plus a wealth of clearly organized information, is available from the Government Printing Office, Superintendent of Documents, Washington, D.C. 20402-9325, for $6.50. For specific local questions, call the Garden's Answer Service at (314) 577-5143, between 9 a.m. and noon, Monday through Friday.



L. A. KELLY

GARDEN GUIDES HONORED (Top row, left to right): Shirley Durfee, Florence Hoey, Helen Hilliker, Mary Jane Kirtz, Kathy Lupo, John Renth, Mary Holekamp, Adrienne Biesterfeldt, Joe McKenna. (Center, left to right): Audrey Allen, Edna Dependahl, Betty Guarraia, Eileen Hahn, Joanne Fogarty, Nancy Thompson, Sally Davidson, Catherine Schumann, Peggy Able, Helen Kuehling. (Front row): Peter Raven, Hazel Loewenwater, Pat Bushman, Nadine Mahe, Jean Haack, Jan Niemoeller, Ann Case, Jeannie Broaders.

Volunteer Evening Honors Special Friends

Thursday, July 26 the Ridgway Center was the setting for a festive celebration in honor of the hundreds of dedicated volunteers who provided thousands of hours of service to the Garden during the past year. Dr. Peter H. Raven presented awards to several individuals in special tribute to their outstanding contributions.

The **Special Achievement Award** went to **Horace Allen** and **Bob Lumley**, volunteers in floral display (see the *Bulletin*, January-February 1989). Mr. Allen, a volunteer since 1986, designs and builds the charming props and animated mechanical figures that enliven the Garden's annual flower shows. Horace learned his craft in the display department at Scruggs, Vandervoort & Barney in 1948, and gave 624 hours to the Garden in 1989. Mr. Lumley, a self-taught carpenter who retired as president of United Electric Supply, came to the Garden as floral display's first volunteer in 1985. Bob contributed 368.5 hours in 1989, building scenery and helping with every phase of the displays. Horace and Bob's efforts have made the spectacular flower shows possible.

The **Special Services Award** was presented to **Clara Moult**, a volunteer in the Garden Gate Shop. Clara has worked in the Shop for 16 years with an average of 500 hours per year. Her cheerful presence helped customers and staff through the Shop's recent relocation, and makes visiting the Garden Gate Shop a special treat.

Margaret Soehlig was honored posthumously with the **Volunteer Emeritus Award**. Margaret passed away on June 16, and her sister Dena Soehlig accepted the award in her memory. During her active service, Margaret had been a volunteer in the Garden library, where she had given generously of her time and skills with over 1000 hours since 1980. She completely relieved the staff of book processing chores, and her cheerful, dependable presence is deeply missed. The Garden staff and friends were grateful for the opportunity to celebrate a beloved and valued colleague.

Rosemary Armbruster received the **Commitment Award** for her work in the Garden library. The award recognizes faithful, conscientious performance of the less glamorous tasks that are so necessary for the smooth functioning of any institution. Rosemary shelves library books and systematically verifies every card in the circulation checkout file, as well as numerous other library tasks. The staff is deeply grateful for her dedicated, efficient service.

The **Group or Organization Award** went to the **Garden Guides**. Since 1978 this talented group of men and women has introduced the public to every facet of the Garden, educating and welcoming people of all ages. The Guides escort more than 35,000 visitors about the grounds every year. They are on hand weekends, evenings, and holidays in all kinds of weather, and provide invaluable assistance in researching, compiling, and presenting information on every new addition to the Garden. Their dedication and enthusiasm make the Garden an even more exciting place to visit.

In presenting these awards, Dr. Raven said, "It is impossible to exaggerate the extraordinary contributions made to the Garden by its volunteers. They enhance and enrich the experience of everyone who comes here, from staff to visitors. We could not achieve what we do without them, and we are very grateful indeed."

L. A. KELLY

(Left to right): Horace Allen, Rosemary Armbruster, Bob Lumley, Clara Moult, Jeanne McGilligan, Dena Soehlig, Peter Raven.

SEPTEMBER

1-3 SATURDAY-MONDAY

Japanese Festival "Seeing Japan"

9 a.m. to 10 p.m., Saturday and Sunday; until 8 p.m. Monday (Labor Day). Festival continues, sponsored by the Fannie May/Coleman Foundation, Ridgway Center and grounds. Storytelling; San Jose Taiko drummers; Ikebana demonstrations featuring Ikka Nakashima, president of the Ikenobo Ikebana Society in Chicago; candlelight walks (Sat. & Sun. only); exhibit of photographs of the Japanese Garden by Jack Jennings; kitemaking, martial arts, dance, mime, crafts, food, and more! Financial assistance for certain events provided by the Arts and Education Council of Greater St. Louis, and by the Missouri Arts Council, a state agency. Program brochures are available at the ticket counter, or call the Festival Hotline at 577-5198.

4 TUESDAY

Garden Hours Change

9 a.m. to 5 p.m. daily, through Sunday, May 26, 1991. The Garden will be open every day except Christmas, as extended summer hours come to an end.

9-23 SUNDAY-SUNDAY

National Geographic Photography Exhibit

9 a.m. to 5 p.m. daily, Ridgway Center. Color photographs by James P. Blair, taken for "The Plant Hunters: A Portrait of the Missouri Botanical Garden," a feature story in the August 1990 issue of *National Geographic*. The exhibit also was on display during July 1990. Copies of the August issue are on sale in the Garden Gate Shop while supplies last. See *September 12 and 14*. Free with regular Garden admission.

14 FRIDAY

Lecture by James P. Blair, Photographer for National Geographic

1:30 p.m., Shoenberg Auditorium. A slide lecture on the crisis of global deforestation, seen through the eyes of a master photographer. Open to the public; seating is limited. Free with regular Garden admission. *See September 12.*

Missouri Botanical Garden

CALENDAR OF EVENTS

September-October 1990

JAMES P. BLAIR NATIONAL GEOGRAPHIC SOCIETY

SEPTEMBER 12 / LECTURE & RECEPTION

National Geographic Photographer James P. Blair

Slide Lecture: 11 a.m. and 1:30 p.m., Shoenberg Auditorium. James P. Blair, photographer for the *National Geographic* feature "The Plant Hunters: A Portrait of the Missouri Botanical Garden," discusses the crisis of global deforestation (see story on page 3). Free, for Members only. Seating is limited.

Reception: 6 to 8 p.m., Ridgway Center. Members are invited to meet Mr. Blair, who will autograph copies of the August issue of *National Geographic* available from the Garden Gate Shop. Cash bars, music. Dinner buffet available in Gardenview Restaurant. For Members only. Watch your mail for details.

SEPTEMBER 13 / MEMBERS' DAY

Slide/Lecture: "Madagascar"

1 and 7:30 p.m., Shoenberg Auditorium. Exploration and conservation in Madagascar by Dr. George Schatz, the Garden's assistant curator in residence. A fascinating look at the world's fourth largest island, home to many plants and animals found nowhere else on Earth. Free to members. Seating is limited.

WALKING TOURS
Every Tuesday, Saturday and Sunday 1:00 p.m.

Join the Garden Guides for a tour of the grounds, featuring the art, architecture, history and horticulture of the Garden in all its autumn beauty. Meet at the ticket counter in the Ridgway Center. Free with regular Garden admission.

15-16 SATURDA SUND

Men's Garden Clubs Show

Noon to 5 p.m. Saturday, 9 a.m
5 p.m. Sunday, Ridgway Cente
The Greater St. Louis Men's G
den Clubs host a juried show fe
ing flowers, vegetables, house
plants, cacti, and more. Free w
regular Garden admission. The
lic is invited to enter; call 721-5
for more information.

16 SUNDAY

Daylily Sale

9 a.m. to 3:30 p.m., Ridgway C
ter. The West County Daylily C
will sell extra plants from the
Jenkins Daylily Garden at the M
souri Botanical Garden. Procee
from the sale benefit the Garde
daylily display. Regular Garden
admission.

17 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Cente
Free, expert advice from Maste
Gardeners on gardening questio
and problems. Free with regula
Garden admission.

19-22 WEDNESD SATURD

Fall Bulb Sale

9 a.m. to 6:30 p.m., Wednesday
Thursday, for members only; 9
to 5 p.m., Friday and Saturday,
opens to the public. Thousands
spring-blooming bulbs including
lilies, irises, tulips, hyacinths ar
more are on sale in Orthwein F
Hall. Members receive 20% off
merchandise, all four days. Reg
Garden admission.

21 FRIDAY

"Sunship Earth" Lecture

7:30 p.m., Shoenberg Auditoriu
Prof. Steve Van Matre, chairma
the Institute for Earth Educatio
will present a stimulating view
the Earth and our relationship t
(See story on page 16.) $4 for G
den members, $5 for non-mem
Seating is limited. Call 577-513
register.

PTEMBER 28 - OCTOBER 6
stralia Week 1990

Garden joins with other institutions and art galleries to ent a city-wide celebration of the culture of Australia. The k of events is jointly sponsored by the St. Louis Regional nmerce and Growth Association and the new Australian-erican Chamber of Commerce of St. Louis. For events at the den, see below.

FRIDAY

oit of Australian Art

.. to 5 p.m. daily, through oer 28. Featuring the art of alian mother and daughter and Mandy Martin, in con-on with "Australia Week ". Landscape paintings in oil by ly Martin will be on display in santo Hall, and floral water-s by Beryl Martin will be on it in Spink Pavilion. Financial tance provided by the Missouri council, a state agency. Trans-tion from Australia for Mandy n's work furnished by Qantas ays Limited. Free with regular en admission.

30 SUNDAY

"A Sunday Down Under"

1 p.m., Shoenberg Auditorium. Dr. Patrick McCaughey, director of the Wadsworth Atheneum in Hartford, Connecticut, will lecture on contemporary Australian art. 2:30 to 5 p.m., double decker bus tour to exhibitions of Australian art at The Forum and Austral Gallery. Meet artists Beryl and Mary Martin and Robert Boynes. Co-sponsored by the Missouri Botanical Garden, The Forum, Austral Gallery and the Harvard Club of St. Louis. Lecture only: regular Garden admission. Bus tour: $20 per person, $15 for members of the Garden, The Forum, and the Harvard Club, includes admission, bus, gallery talks, refreshments. Reservations for bus tour are limited and must be prepaid. Call 577-5125 for information and reservations.

SEPTEMBER

nued

SATURDAY

kshop with Steve Van Matre

. to 5 p.m., Shaw Arboretum. xciting opportunity to study presented in the "Sunship " lecture on September 21. story on page 16.) $40 per par-nt includes lunch. Reserva-are limited. Call 577-5138 to er.

-30 SATURDAY-SUNDAY

a Society Show

to 5 p.m. Saturday, 9 a.m. to . Sunday, Ridgway Center. Greater St. Louis Dahlia Soci-ill display all sizes and varie-f these popular flowers. Free regular Garden admission.

KING SCHOENFELD

30 SUNDAY

Climatron's 30th Birthday Celebration

11 a.m. to 3 p.m., Climatron and grounds. Come celebrate the Climatron's 30th anniversary, with fun for the whole family. Free with regular Garden admission. Watch your mail for details.

GARDEN WALKERS BREAKFAST
Every Wednesday and Saturday
7 a.m. to 10:30 a.m.

Due to popular demand, the Garden Walkers Breakfast program will continue this fall. The Garden will open early on Wednesday and Saturday mornings, and the mileage of various paths around the grounds will be available at the ticket counter. Health and nutrition programs will be offered in cooperation with the American Heart Association. The Gardenview Restaurant will offer its "heart healthy" breakfast buffet of cereals, fruit, juice, and yogurt. The greenhouses will not open until regular opening hours at 9:00 a.m. Admission is free before noon every Wednesday and Saturday.

OCTOBER

1 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See September 17 for details.

6-7 SATURDAY-SUNDAY

Gesneriad Society Show and Sale

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m. Sunday, Ridgway Center. The Gateway West Gesneriad Society will feature African violets, gloxinias and more. Free with regular Garden admission.

10 WEDNESDAY

Gift Planning Seminar

6:30 p.m., Ridgway Center. A discussion on financial planning and its benefits for you and your family, led by experts. See story on page 16. Free, but reservations are required; call 577-9532.

11 THURSDAY

"Gardens and Parks of the World"

7 p.m., Shoenberg Auditorium. Slide lecture celebrating some of the world's most beautiful and historic gardens and parks. Speaker to be announced. Limited seating. Free.

15 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See September 17 for details.

24 WEDNESDAY

"Gardens and Parks of the World"

7 p.m., Shoenberg Auditorium. See October 11 for details.

OCTOBER 16 / LUNCHEON, LECTURE, & SHOPPING
"Gardening & Entertaining With Martha Stewart"

10 a.m. to 4 p.m., Adam's Mark Hotel. A spectacular bazaar to benefit the Garden's Center for Home Gardening. Shop from displays by some of St. Louis's finest antique and specialty stores; then enjoy lunch and a slide lecture by Martha Stewart, America's favorite hostess and author of seven best-selling books on home entertaining and lifestyle. Ms. Stewart will autograph her books. Watch your mail for details.

OCTOBER 21 / MEMBERS' DAY / Sunday Cider Walk

1 to 3 p.m., Garden grounds. Sip free apple cider and enjoy the autumn beauty of the Garden. Stroll about the grounds, and listen to the delightful harmonies of the Rivertown Barbershop Quartet. Free, for members only.

From the Membership Office

A SPECTACULAR SPECIAL EVENT

Gardening and Entertaining with Martha Stewart

L. A. KELLY

The Special Event Committee met at the home of chairman Barbara Cook in June. Pictured, left to right, top row: Sue Rapp, Mary Longrais, Nora Stern, Peggy Lents, Suzy Grote. Middle row: Holly Blumeyer, Sue Oertli, Ellen Dubinsky, Barbara Cook, Isabelle Morris, Mim Kittner, Susie Schulte. Front row: Ann Bowen, Ginny Senkosky, Holly Brigham, June Kummer, Mary Randolph Ballinger.

The Missouri Botanical Garden is sponsoring a special day with Martha Stewart at the Adam's Mark Hotel on Tuesday, October 16, 1990. The luncheon, lecture and shopping bazaar will raise funds for the Garden's new Kemper Center for Home Gardening.

Martha Stewart, distinguished hostess, author and caterer, published her landmark book *Entertaining* in 1982. *Entertaining* was followed by seven more bestselling books on food, decorating and lifestyle. This exclusive speaking engagement with Martha Stewart will focus on her new gardening book which will be published in 1991.

Luncheon guests will have the opportunity to shop from fabulous displays by St. Louis area antique and specialty stores. Martha Stewart will greet guests and autograph their favorite books, which will be available for purchase at the luncheon. The decor will feature spectacular floral displays arranged by members of the East Central District of the Federated Garden Clubs of Missouri.

The Center for Home Gardening will provide educational programs for amateur and professional gardeners, including a wide array of outdoor displays appropriate for the St. Louis climate.

Members will receive an invitation to this spectacular special event in the mail in early September. Reservations are limited so make yours early!

MEMBERS' TRAVEL PROGRAM

Gardens of the Caribbean

■*FEBRUARY 9 to 19, 1991*

Join gardening historian Patrick Bowe, a favorite leader of past Garden tours, for a cruise aboard the magnificent Royal Viking Star, one of the premier ships sailing the Caribbean. Leave from Fort Lauderdale, and visit St.Thomas, U.S. Virgin Islands; St. John's, Antigua; Bridgetown, Barbados; Fort-de-France, Martineque; Philipsburg, St. Maarten; and return to Fort Lauderdale. Enjoy special lectures and garden tours led by Patrick Bowe, plus all the pleasures of life at sea. Call 577-9517 for tour costs and reservations.

Lewis and Clark History Tour

■*JUNE 16 to 29, 1991*

Retrace the route of the famed 1804 expedition of Lewis and Clark, led by Ray Breun of the Jefferson National Expansion Historical Association and Nancy Morin of the Garden. This motorcoach tour leaves St. Louis and heads west through St. Joseph, Omaha, Sioux City, Ft. Pierre, Billings, Helena, Great Falls and Missoula, to Portland. Stops along the way will highlight state and national parks and historical sites of the Lewis and Clark expedition, featuring the flora and fauna the explorers saw almost 200 years ago. Watch for more details and reservation information for this exciting first-hand learning experience.

Coming in 1991:

- *MOORISH GARDENS OF MOROCCO AND SPAIN—Dates to be announced*
- *MADAGASCAR—October 1991*

Watch your mail or call Brenda Banjak at 577-9517 for details on these exciting trips!

Double Your Dollars!

Many employers will match your contributions to your favorite charitable and cultural institutions. Many companies will contribute double or even triple the value of their employees' donations. You can increase your support of the Garden by checking with your employer for the company's matching gift policy.

The Garden has a new brochure available that lists most large companies currently matching gifts to cultural institutions. For a free copy, please write to the Membership Office, Missouri Botanical Garden, P. O. Box 299, St. Louis, Mo. 63166. For answers to specific questions, please call Linda Whittall at 577-5108.

New Environmental Display Tells "What You Can Do"

THE path through the lush green Climatron ends dramatically in the Brookings Interpretive Center on the Tropics, at a stark gray diorama highlighting the terrible reality of tropical rain forest destruction. After examining the diorama and its challenging videotape, viewers are usually moved to ask, ''But what can I do to help the rain forests?'' A new display installed in the Brookings Center in mid-August answers that question, as well as discussing ways to respond to important related environmental issues, such as acid rain, global warming, and waste management.

The display ''What You Can Do'' starts with a montage of photographic images. Text and captions give encouraging messages about the benefits of recycling, changing patterns of consumption and development, and other challenges we face. Also noted are responses from institutions like the Garden, operating through programs in public education, research, and conservation.

The focal point of ''What You Can Do,'' is a set of three attractive, free pamphlets. ''Learn'' includes a brief environmental bibliography and discusses other printed and electronic sources of information. ''Support'' encourages involvement with and contributions to environmental organizations, focusing on describing a handful of the preeminent groups working in the field. ''Act'' suggests practical actions people can take in their own homes, in schools, in businesses, in the community, and as voters and citizens.

Marcia Kerz, the Garden's director of development and public relations, observed, ''We're thrilled to be able to share this information with our members, visitors,and friends. The Garden has long been a leader in helping people understand how our environment works, and the kind of knowledge sparked by this display is simply the logical next step which empowers us all to act for positive change. We look forward to many more years of being a resource in this field.''

World Wildlife Fund Supports Project With Latin American Botanical Gardens

TWO recent grants from the World Wildlife Fund (WWF) support an important new project to strengthen conservation activities in Latin America. A $10,000 grant to the Missouri Botanical Garden supports ''A Survey of Needs and Opportunities of South American Botanical Gardens for Conservation,'' a project developed under the leadership of Dr. Enrique Forero, the Garden's director of research. The second grant, for $7,500, covered the cost of sending seven people, including three project participants, to the Latin American Botanical Congress held in Cuba in June, 1990.

Botanical gardens, working in cooperation with private organizations of citizens concerned with environmental problems and with the general public, are of critical importance in South America. The gardens can provide leadership in conservation programs, research, and environ mental education. The survey project will allow the gardens to increase their effectiveness by assessing their current activities and capabilities and by encouraging greater collaboration at the national and regional levels. Workshops will be held to coordinate activities, establish networks and develop goals and strategies for the future.

The first phase of the project will be carried out in Brazil, Colombia and Argentina. In each country a local botanist will work directly with the country's botanical gardens to implement the survey and organize the workshops, using the Botanic Gardens Conservation Strategy as a starting point. Botanists Germana Reis of Brazil, Hermes Cuadros of Colombia, and Arturo Martinez of Argentina will be the project leaders. A later phase of the project will duplicate the study in Venezuela and Chile.

''We are very grateful to World Wildlife Fund and pleased to be able to assist with this effort,'' said Dr. Forero. ''This work in Latin America will benefit botanical research and conservation efforts worldwide.''

(L-R): Peter Raven; Mary Good, chairman, NSB; Benjamin Shen.

Raven Appointed to National Science Board

Dr. Peter H. Raven, director of the Garden, has been appointed to the National Science Board (NSB) effective May 10, 1990. Appointees to the Board are nominated by the President of the United States and confirmed by the United States Senate.

The National Science Board is the governing body of the National Science Foundation. The Foundation, established by an act of Congress in 1950, initiates and supports basic research and education in science and engineering, and fosters the interchange of information among scientists and engineers in the U.S. and foreign countries.

The twenty-four member board is composed of distinguished individuals from a variety of scientific disciplines. Dr. Raven, whose term expires May 10, 1994, was sworn in at a ceremony in Washington D.C. along with Dr. Benjamin S. Shen, the Reese W. Flower Professor of Astronomy and Astrophysics at the University of Pennsylvania.

Raven Awarded International Prize

Dr. Peter H. Raven has been awarded the prestigious prize of the Institut de la Vie created by Electricité de France. The award was presented at a ceremony in Paris on June 25, 1990.

Raven shares the honor with Edward O. Wilson, the distinguished entomologist who is Frank B. Baird Jr. Professor of Science at Harvard University. Raven and Wilson were selected by an international jury of 23 members from nine countries. This is the sixth time the prize has been given.

Raven and Wilson were commended for their scientific work on the evolution and ecology of, respectively, plants and insects. They were also recognized for their leadership in defending biological diversity and their role in informing the public and political authorities worldwide about the perils presented by deforestation and species loss.

MBG-Videos Teach Science

Young students will soon be able to learn more about science and our environment through MBG-Videos.

MBG-Videos is a unique cooperative effort between the Missouri Botanical Garden and Herb Halpern Productions. Educational video programs for elementary school students were written by Larry DeBuhr, director of the Garden's education division, and the education staff. Herb Halpern Productions will produce and market the videos to elementary schools, parent-teacher organizations and private academies.

"In recent years the Garden has greatly expanded its activities in science education for young people. This project is a significant step in that program as it will allow teachers to bring many facets of the world of nature right into the classroom in an easy-to-use format," said DeBuhr.

Program content was suggested by elementary teachers and principals. The first series of 10- to 12-minute programs will focus on Life Habitats and will feature young students exploring ponds and other natural settings at the Shaw Arboretum. Lively music and computer generated animation will enhance the presentations. Other series will center on Biology of Plants, Foods of the World, and Life in Deserts, Grasslands and Forests.

The Life Habitat Series, consisting of six videos, will be available for purchase in September for $150.00 for the set of six. Members and teachers interested in purchasing the programs for their children or their schools can call toll free 1-800-927-9229.

THIS FALL AT SHAW ARBORETUM

"Sunship Earth" Celebrates Earth Education

In celebration of the fifth anniversary of the Earthkeepers Program at Shaw Arboretum, the Garden will host a lecture and workshop led by Steve Van Matre, September 21 and 22, 1990. Professor Van Matre is an internationally acclaimed educator whose animated talks and spirited commentary both inspire and instruct.

Van Matre says, "We want to help people understand the environmental crises we face, but we also want to help them enjoy the journey. For this is the greatest trip of them all—as we travel together with all the other wild and weird and wonderful creatures here on this small, self-contained vessel of life—on our journey among the stars."

Van Matre is a professor of environmental education and interpretation at Aurora University in northern Illinois, and chairman of The Institute for Earth Education, a nonprofit organization. He is the author of many books, and is president of Sycamore Associates, an interpretive design and planning firm.

The Garden's education division and staff at the Shaw Arboretum have worked closely with the Institute for Earth Education in developing the Earthkeeper Training Center at the Arboretum, one of a growing number of such centers in the United States, Canada, Great Britain and Australia. Earthkeepers emphasize "living lightly" in joy and harmony with the natural world. Carefully designed sequential learning experiences lead students through six levels of understanding ecological concepts, which is presented as a lifelong process.

In Von Matre's words, "Falling in love with the earth is one of life's great adventures. It is an affair of the heart like no other; a rapturous experience that remains endlessly repeatable throughout life. This is no fleeting romance, it's an uncommon affair, one unconstrained by age or custom and strengthened rather than diminished through sharing. The more one gives it away, the stronger it grows."

For more information, see the Calendar of Events, page 12. To register for the lecture and workshop, call 577-5138.

Garden Guides Seek Volunteers

The Garden Guides will be offering a training course for new guides beginning January 10, 1991, and continuing for ten Thursday sessions. The course will cover all areas of the Garden and will consist of lectures and tours by Garden staff and experienced guides. Garden Guides give tours to groups of all ages and are committed to regular service one day a week, helping at special events, and attendance at a monthly continuing education meeting. Those interested in this stimulating volunteer opportunity may obtain an application form by calling Jeanne McGilligan at 577-5187. Candidates will be interviewed in October.

Master Gardeners Earn Level III Status

At Shaw Arboretum on June 13, 25 Master Gardeners were awarded Level III status. Level III is the highest level awarded in the St. Louis Master Gardener program and entails a minimum of 90 hours of training and 150 hours of volunteer service. "The Level III graduates are the real backbone of the Master Gardener program," said Glenn Kopp, MBG Master Gardener manager. "Their knowledge, experience, dedication and enthusiasm make them invaluable."

Level III graduates provide expert assistance through phone consultations, on-the-spot plant clinics, and lawn care consultations. Master Gardeners also participate in organizing, planning and managing community and school gardens, and provide instruction for children and adults in gardening techniques.

The new Level III Master Gardeners are: Ann Case, Mary Chapman, Sr. Rosemary Connell, Herman Easterly, Mary Ely, Lois Friedman, Irene Frison, Christine Kurtz Fuerhoff, Kathleen Glass, Keith Heerlein, Albert Hirson, Kitty Hoblitzelle, Helene Holwerda, W. Boardman Jones Jr., Helen Kuehling, Linda Meckfessel, Isabelle Morris, Donald Neal, Mary Reedy, Jill Schroer, Maxine Schuler, Suze Stark, Jean Toenjes, Cole Weber, and Linda Whitten.

Gift Planning

We enjoy the Garden throughout the seasons and have come to expect that it will be here always. A way to ensure the future of the Garden, and to ensure the future of our own families is through financial planning. The best way to plan effectively is to learn as much as possible about all the available options in sound financial management.

As part of the Gift Planning Program a seminar on Financial Planning is scheduled for Wednesday, October 10, 1990 at 6:30 p.m. in the Garden Room of the Ridgway Center. Mary Kay Schumacher, a personal financial planner, and John Valentine, an estate planning attorney, will explore case studies to illustrate a variety of possibilities that provide benefits to individuals and their families and that can, in addition, benefit charitable organizations.

There is no charge for the seminar, but reservations are required. Please call Ernestina Short at 577-9532 to reserve a place, or if you have additional questions.

Trustee Profiles

CHARLES E. KOPMAN

The Board of Trustees approved the term appointment of Charles E. Kopman at their April 18, 1990 meeting.

Mr. Kopman joins the Board with an exceptionally strong interest and background in conservation issues. He serves as president of The Missouri Chapter of the Nature Conservancy and has demonstrated commitment to the field of conservation throughout the world.

"Charles understands in detail the Garden's goals and objectives and his background and interest will be extremely valuable to the Garden's present efforts," said Peter H. Raven, director.

Kopman has taken an active interest in environmental issues by serving on numerous committees on both the local and national level. His involvement includes serving as director of the Conservation Federation of Missouri; director and secretary of the Open Space Council of St. Louis; a member of the State of Missouri Advisory Committee on Environmental Education and The Advisory Committee on Solid Waste; and chairman and director of the Missouri Chapter of the Nature Conservancy. He is also an avid hiker, especially in New Hampshire, the English Lake District, and at the Arboretum, and an enthusiastic supporter of theatre in the St. Louis area.

A practicing attorney and managing director of the Biggs & Hensley Law Firm, Kopman is a native of St. Louis and returned to the area following graduation from Yale and the University of Chicago Law School. He and his wife, Sally, have three children.

BLANCHE TOUHILL

On August 1, 1990, Blanche Touhill became a member of the Garden's Board of Trustees by virtue of her office when she assumed the position of interim chancellor of University of Missouri-St. Louis. Dr. Touhill succeeds Marguerite Ross Barnett.

A St. Louis native, Dr. Touhill has been vice chancellor for academic affairs at UM-St. Louis since 1987. She served as associate vice chancellor and associate dean of faculties for 13 years prior to being named vice chancellor.

Touhill joined the faculty of UM-St. Louis in 1965 as an assistant professor of history. She holds a joint appointment in history and education. Touhill earned her bachelor's, master's and doctoral degrees from St. Louis University. She is the author of four books, chairs a Missouri committee of the American Council on Education/National Identification Program, and is an executive board member of the Missouri State Historical Society.

"We are delighted to have Dr. Touhill join the Board of Trustees," said Dr. Peter H. Raven. "We look forward to her contributions as a distinguished educator, administrator, and lifelong member of the St. Louis community."

Blanche Touhill

RICHARD BENKOF

◀ ***(Left to right): Peter Raven, Roy Taylor, Eliot Paine, George Ware, Robert Bowden.***

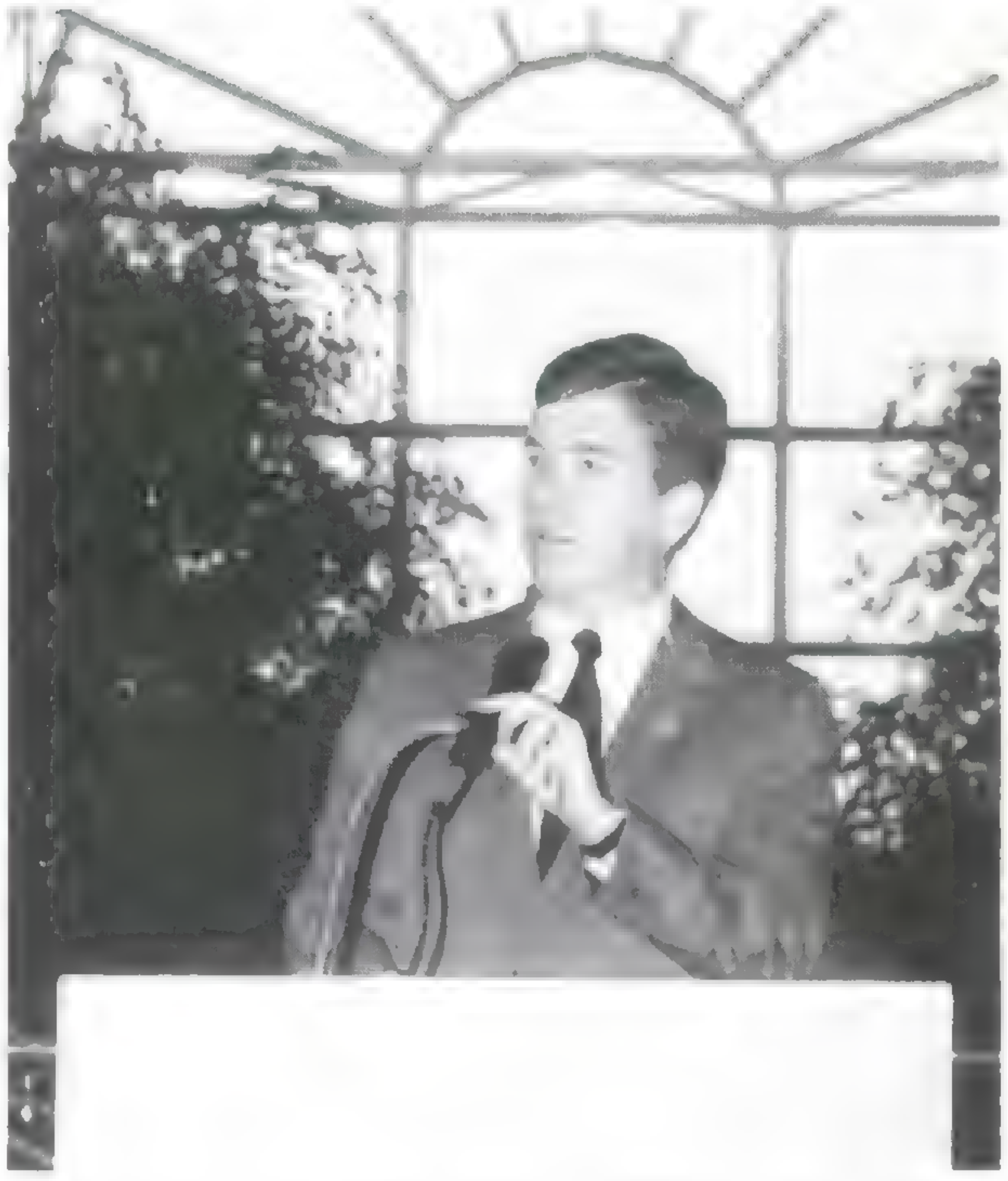
Midwestern Horticulturists Meet at MBG

The Missouri Botanical Garden hosted leaders from three botanical institutions of the Midwest on July 26 at a meeting to discuss programs of common interest. The visitors were Roy L. Taylor, president and chief executive officer of the Chicago Horticultural Society, from the Chicago Botanic Garden; C. W. Eliot Paine, executive director of The Holden Arboretum, Mentor, Ohio; and George Ware, research administrator at The Morton Arboretum, Lisle, Illinois. The three met with Peter H. Raven, director of the Missouri Botanical Garden, and Robert Bowden, the Garden's director of horticulture.

The day-long meeting provided an opportunity to discuss common goals and projects, including possible joint exploration trips to collect plants from other countries for cultivation and display. "Because we share a common climate with these institutions, we are natural partners in studying and growing plants," said Bowden. "Many areas of Asia and Russia, for instance, have climates similar to ours and grow plants that are not native here. Many of the plants we could collect represent superior species of hardy, ornamental plants. We are always seeking ways to increase the diversity in our displays, and to provide new opportunities for research and for education of the home gardener."

Spink Gallery Celebrates 500,000 Visitors

(Left to right): Peter Raven; Helen Boehm, chairman of Boehm Porcelain Studios; Frank Cosentino, president of Boehm Porcelain Studios; Johnson Spink, Edith Spink.



The Honorable Roy Blunt, Missouri's Secretary of State, addressed the gathering.

On Friday, August 3, members and friends met in the Ridgway Center to honor the Spink Gallery, which houses a magnificent collection of Boehm porcelain floral sculptures, and also to salute the 40th anniversary of the Boehm Porcelain Studios. The Spink Gallery and its collection were made possible through the generosity of Mr. and Mrs. C.C. Johnson Spink in 1982. The Gallery has welcomed over half a million visitors.

Homer E. Sayad

New Botanical Garden Subdistrict Commissioner

Homer E. Sayad was recently approved by Mayor Vincent C. Schoemehl, Jr. to serve as a member of the Botanical Garden Subdistrict Commission from St. Louis. Mr. Sayad succeeds the late John H. Poelker. The Subdistrict is comprised of ten members, five from St. Louis City and five from St. Louis County. It serves as the public body responsible to receive and disperse funds acquired through the property tax support approved by voters in 1983.

A resident of St. Louis, Mr. Sayad was an original Commissioner of the Metropolitan Zoological Park and Museum District. Through the years, Sayad has been active in many community organizations including the United Fund of Greater St. Louis, Greater St. Louis Arts and Education Council, Opera Theater, and St. Louis Children's Hospital. He has received a number of personal and professional awards.

Mr. Sayad is an accountant and retired senior partner of Deloitte Touche (formerly Deloitte Haskins & Sells).

''As a member of the Garden since 1977, I have always been interested in the history of the Garden and its founder, Henry Shaw. The Garden is a beautiful facility and a wonderful place to visit no matter the season. It will be a pleasure to serve in the capacity of Subdistrict Commissioner,'' said Mr. Sayad.

Behind the Scenes

New Manager of Public Relations

The Missouri Botanical Garden is pleased to announce that Douglas Arnold has been named the new manager of public relations. Arnold has been managing public relations programs since 1974 and brings to the Garden significant experience from a wide array of organizations.

A native St. Louisan, Arnold most recently was employed as an independent consultant directing the public awareness efforts for Missouri's 50 public and private colleges and universities. Arnold also served with the Aaron D. Cushman Agency as an account supervisor and creative director managing a variety of major accounts from the former Omni Hotel at Union Station to the Missouri Department of Economic Development. In addition, Arnold has supervised and coordinated corporate public relations programs as an employee of ACF Industries, ITT and McDonnell Douglas.

Arnold has produced numerous award-winning communications projects and received a recent IABC Bronze Quill Award for a corporate video program. He graduated from the University of Missouri-Columbia School of Journalism.

''We are particularly pleased to bring Douglas to the Garden,'' said Dr. Peter Raven. ''His professional expertise will help build even greater awareness of the many events, scientific programs, research projects and new facilities, such as the Center for Home Gardening.''

Douglas Arnold

From the Garden Gate Shop

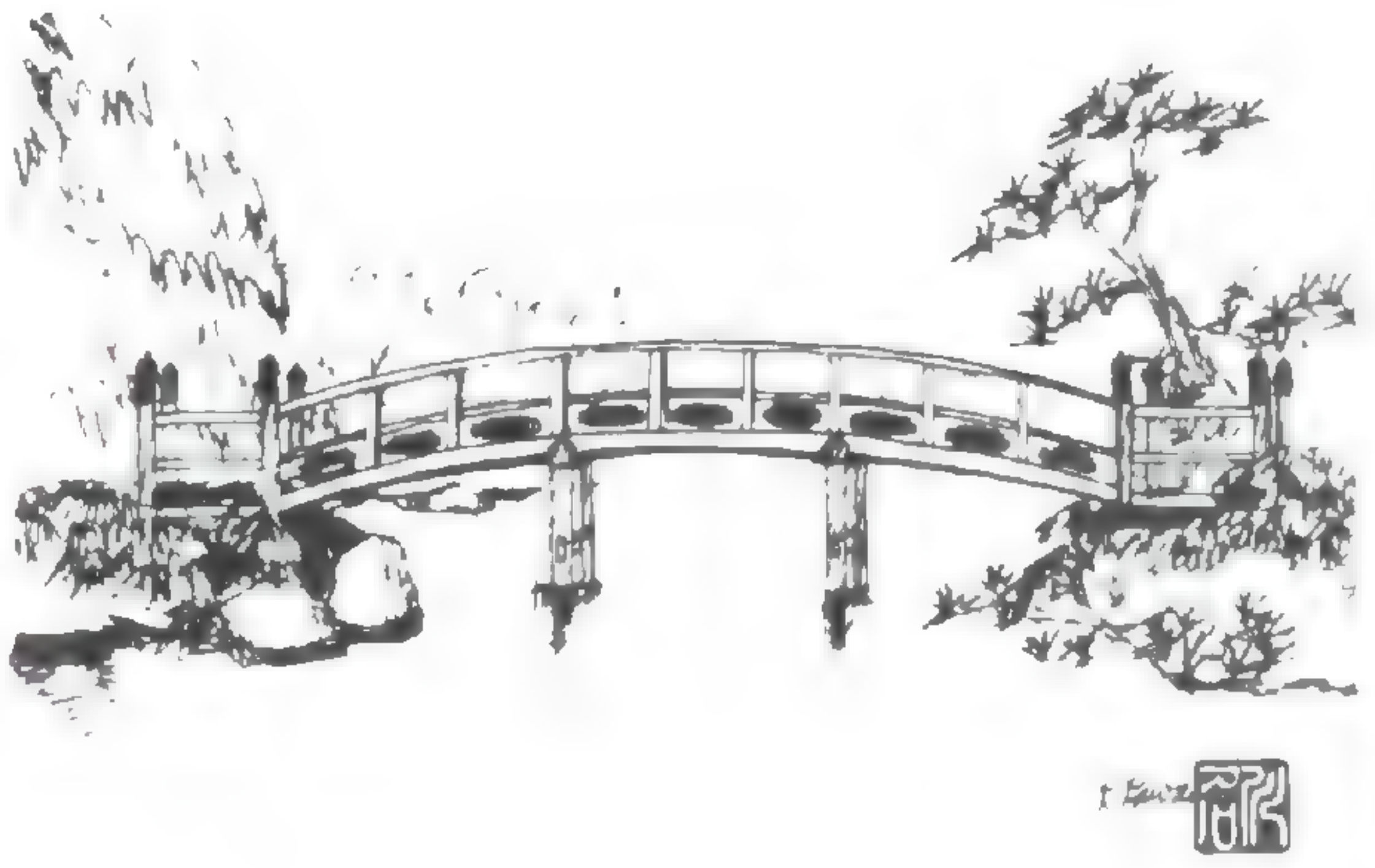
Japanese Garden Notepaper Is Available Again

Reprints of the Shop's most popular notepaper is available again. Featuring a sketch of the Drum Bridge *Taikobashi* in Seiwa-En, drawn by Koichi Kawana, the designer of the Japanese Garden, the notepaper is printed on 100% recycled paper. It is available in sets of 10 notes with matching envelopes for $7.00.

Fall Bulb Sale

Members' Pre-Sale: 20% Off
Wednesday and Thursday,
September 19 and 20
9:00 a.m. to 6:30 p.m.

Sale Opens to the Public
Friday and Saturday,
September 21 and 22
9:00 a.m. to 5:00 p.m.



Visit Orthwein Floral Hall to see a magnificent display of spring blooming bulbs and colorful hardy mums. The Shop will feature gifts, books, gardening accessories, tools and stationery. Members receive a 20 percent discount on all merchandise, all four days. Plan now for a colorful Spring garden!

Boehm Creates a New Rose for the Garden

The Boehm Porcelain Studio has created the "Tower Grove Rose," a porcelain floral piece designed exclusively for the Missouri Botanical Garden. Hand-painted in delicate pink, this exquisite piece is available in the Shop for $175.00. It is a perfect gift for your favorite collector!

1991 Calendar Features Photographs by Jack Jennings

The spectacular new Missouri Botanical Garden Calendar for 1991 is now available in the Shop. It is printed in full color on recycled paper.

The 16 x 12 inch poster-size calendar features photographs of the Garden taken by Jack Jennings. A native of St. Louis, Jack began photographing the Garden in 1978. He takes thousands of slides every year, in all seasons and types of weather. The 1991 Calendar is his tenth, and his beautiful photographs are cherished by all who love the Garden. The 1990 Calendar was honored recently with an Award of Merit from the American Association of Museums. The 1991 Calendar is available in the Shop or by mail (see form below) at $10.95.

1991 Calendar Order Form

Please send me ________ Missouri Botanical Garden Calendars at $10.95 each (plus $2.50 postage and handling).

NAME ____________________

ADDRESS ____________________

CITY ________ STATE ________ ZIP ________

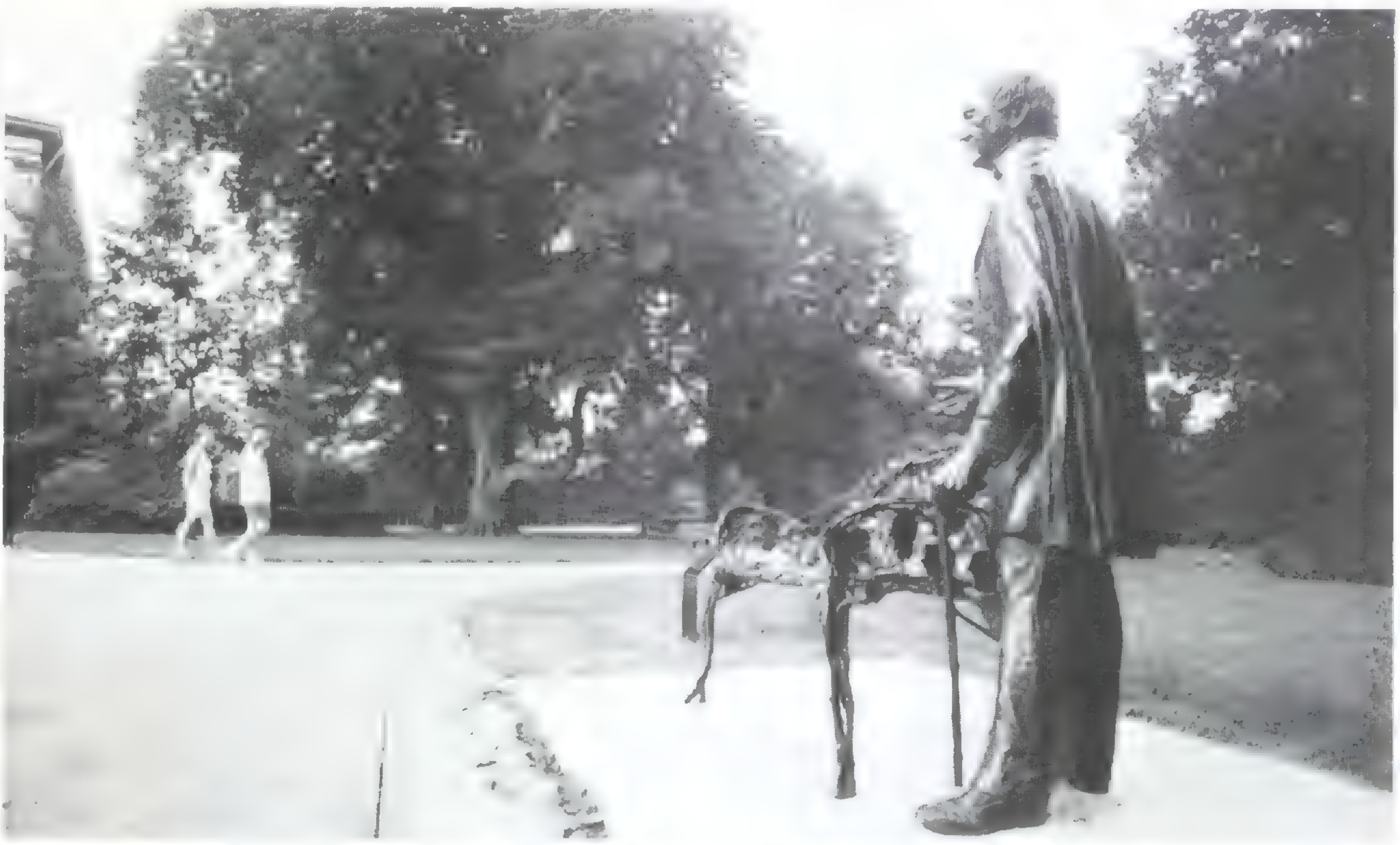
TELEPHONE ____________________

☐ Enclosed is my check for $____________.
Payable to: Missouri Botanical Garden

☐ Please charge:
VISA/MC No. ____________________

Expiration date ____________________
Name as it appears on card:
____

Mail to: Missouri Botanical Garden
Garden Gate Shop
P.O. Box 299, St. Louis, MO 63166



KING SCHOENFELD

Henry Shaw Is Seen Again on Garden Grounds

Visitors to the Garden once again will see Henry Shaw as they stroll through the grounds.

A new life-sized sculpture of the Garden's founding father is now on display outside Tower Grove House. The bronze figure was created by the renowned artist Paul Granlund and was made possible through a donation by Mrs. Ivis Johnston. The newest addition is part of a growing collection of Granlund sculpture at the Garden that includes the delightful work *Zerogee* and the bust of Linnaeus beside the Lehmann building.

"The return of Henry Shaw to the Garden is both a joyous and historical moment for all to cherish. We sincerely appreciate the contribution made by Mrs. Johnston," said Dr. Peter Raven.

The statue was installed July 10, in time to celebrate Henry Shaw's 190 birthday on July 24, 1990.

Gardening and Entertaining With Martha Stewart

In conjunction with Martha Stewart's appearance at the October 16 luncheon to benefit the Center for Home Gardening (see page 14), the Shop will feature a wide selection of her beautiful books. The Garden Gate Shop will be one of the merchants with a display at the benefit, and Martha Stewart's books will be featured.

IN MEMORIAM / *Dr. Thomas S. Hall*

Staff and friends of the Garden and the St. Louis community were greatly saddened by the death on June 12 of Thomas Steele Hall. Dr. Hall was elected a Garden Trustee in 1982 and became a Trustee Emeritus in 1983. Deeply interested in Garden education programs, Hall was a frequent participant in classes and lectures. His love of nature brought him to the Garden several times a week to walk throughout the grounds and enjoy the solace of the surroundings.

Dr. Hall devoted 30 years of service to Washington University during an exciting period of growth. In 1945, Dr. Hall joined the faculty as an associate professor of zoology and in 1949 he was appointed dean of the College of Liberal Arts. Upon retiring from that post in the early 1970s, he continued to teach as a professor of biology.

A writer of articles on scientific matters and on the history of science and medicine, Dr. Hall delved into philosophical theories and was devoted to the study and concepts of ecology. An intellectual and engaging academic leader, Hall was widely respected and will be remembered by students, colleagues and friends as a humane and sensitive individual.

''Compassionate and steadfast in his commitment to lasting human values, both philosophical and aesthetic, both kind and challenging, Tom Hall contributed a great deal that will endure in this community, and to the lives of all who were touched by his life,'' said Dr. Peter H. Raven, director of the Garden.

IN MEMORIAM / *Robert M. Sunnen*

Businessman and philanthropist Robert M. Sunnen died in the crash of a light helicopter he was flying on June 10 near St. Clair, Missouri. Since 1983 Mr. Sunnen had served as a Commissioner of the Botanical Garden Subdistrict of the Metropolitan Zoological Park and Museum District and was a past Chairman of the Commission.

A native St. Louisan, Mr. Sunnen was President of the Sunnen Foundation, a family foundation begun in 1945 by his father, Joseph. During the period 1969 through 1982 the Sunnen Foundation donated more than $320,000 to the Garden for such important efforts as renovation projects in the Lehmann Building, the library recataloging program, and support for mounting tropical plant specimens. The Foundation has also supported local, state, and national activities in education and individual freedom and is particularly noted for its prominent role in the reproductive rights movement.

At the time of his death, Mr. Sunnen was Chairman of Sunnen Products Co. Inc., the largest manufacturer of honing machines and tools in the world. Sunnen was widely respected for his quiet leadership and thoroughness, commitment to community and civic affairs, strong values and genuine belief in people.

Dr. Raven, reflecting on Sunnen and his personal and financial contributions to the Garden and the community, stated, ''Bob Sunnen had a special talent and empathy in working with people. His death is a great loss to all who were associated with him in so many vital issues we face today.''

Tributes

MAY - JUNE 1990

In Honor Of

Mr. Lester Ackerman Sr.
Mr. and Mrs. Henry C. Lowenhaupt
Mrs. Phyllis Adler
Mrs. Florence G. Stern
Jorge Alegre Jr.
Mr. and Mrs. Phillip Schreiber
Ms. Elaine A. Alexander
Amy Alikhan
Sherry Ardekani
Tamara Ball
Beth Boston
Liz Bryan
Carolyn Canavan
Helen Chamness
Jessica Davis
Alyson Domoto
Laura Elzemeyer
Abby Engelsmann
Catherine Fort
Andrea Gunther
Nicole Hall
Marni Hirsch
Mary-Kathleen Kearns
Jaime Kennedy
Allison Klayman
Mary Kuhl
Libby Langsdorf
Anjie Latta
Anne Leontsinis
Clare MacKenzie
Cissy Marshall
Krista Mallette
Kelly McClelland
Amy McDowell
Lizzy McPheeters
Maia Medve
Christy Nentwig
Jennifer Rea
Dannielle Rich
Denny Rothschild
Laura Ryan
Krissi Schchman
Suzy Snowden
Jill Spitzfaden
Alison Sproull
Hana Tepper
Tania Thomas
Rasheedah Tillman
Laura Wood
Mrs. Mary Francis Anderson
Adams School Family
Mr. Craig Andrews
Mississippi Valley Nurseryman's Coop.
Mr. and Mrs. Ken Barry
Mr. and Mrs. Dick Proctor
Mr. and Mrs. Charles Bates
Mr. and Mrs. Edmonstone F. Thompson
Mr. and Mrs. Lee Beaver
Mr. and Mrs. Phillip Schreiber
Mrs. Dorothy Beezley
Mrs. Frances Beezley
Tom Benner
Mrs. Rose Anne Davis
Miss Katherine Blatherwick
Mr. and Mrs. Stuart R. Trottmann
Mr. and Mrs. David S. Boxer
Mr. and Mrs. Walter G. Stern

Mr. Marc Boxerman
Mr. and Mrs. Jeff Shear

Melanie Brodsky
Mr. and Mrs. Phillip Schreiber

Mr. and Mrs. Joseph Brumm
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Diane and Steve Weinstock

Mr. and Mrs. Michael Jersa
Mr. and Mrs. Jim Hoffmeister

Mr. and Mrs. David M. Jones
Dr. and Mrs. August H. Homeyer

Father Robert Kaletta
Holy Redeemer School—Children and Staff

Mr. Leonard Kauffman
Mr. and Mrs. Milton J. Danis

Dr. and Mrs. Jack Kayes
Mr. and Mrs. Herbert M. Talcoff

Keystone-Trinity Lodge #243 A.F.& A.M.
Webster Groves Masonic Temple 125th Anniversary
Keystone-Trinity Lodge #243 A.F. & A.M.

Ms. Ina Jean Kornblythe
Mrs. Herbert Frank

Dr. and Mrs. John Kramer
Mr. and Mrs. John E. Brown

Mr. and Mrs. Richard Kriegshauser
Sue and Phil Schreiber

Mr. Hal Kroeger Jr.
Mr. and Mrs. Raymond W. Peters II
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Mr. and Mrs. Donell J. Gaertner

Richard Lahann
Mrs. Rose Anne Davis

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Mr. and Mrs. Eldridge Lovelace

Mrs. Goldie Lippe
Mrs. Bernice Kranson

Mr. and Mrs. Wesley Lomax—Grandson Evan
Mr. and Mrs. Bernard A. Barken

Rose MacIver
Sharon, Terry, Brian and Kevin Dougherty

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Mrs. Lorette E. Medart

Mr. and Mrs. Thomas McReynolds
Mrs. Leo B. Lundergan

Mrs. William Miller
Sue Schreiber

Mrs. Peggy Musen
Mr. and Mrs. Phillip Schreiber

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Adelaide Dickherber
Ruth Doerner

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Virgil Loeb

Miss Allison Roberts
Mrs. Arthur A. Dunn Jr.

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Mr. and Mrs. Ralph A. Herzmark

Mr. and Mrs. James Rothbarth
Minner Nursery

Steve Rustman
Joyce Koester
Dr. and Mrs. Marshall B. Conrad

Sister Mary Jean Ryan
St. Joseph Health Center and St. Joseph Hospital West Staff

Julian G. Samuel
Ms. Helen C. Maurer

Ms. Debbie Schneider
Ms. Randee Blum

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Mr. and Mrs. Gilbert Rosenthal
Dr. and Mrs. Hyman R. Senturia

Dr. and Mrs. Leo C. Senay Jr.
Mrs. Maria J. Weingartner

Mrs. Marjorie M. Senior
Mr. and Mrs. Paul Ullman Jr.

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Mr. and Mrs. Phillip Schreiber

Mr. and Mrs. Larry Shifrin
Mr. and Mrs. Richard Halpern

Mr. and Mrs. James A. Singer
Mr. and Mrs. Jeffrey Demerath

Mr. Jason Sklar
Mr. and Mrs. Jeff Shear

Mr. Randy Sklar
Mr. and Mrs. Jeff Shear

Mr. Steve Sokolik
Mr. and Mrs. Jeff Shear

Miss Jane Sommer
Mrs. Arthur A. Dunn Jr.

Mrs. Barbara Soule
Mrs. Ruth Schwartz

Mrs. Selma H. Soule
Mr. and Mrs. Dan Bluestone
Mr. and Mrs. Aaron Fischer
Dr. and Mrs. Oscar H. Soule

Mr. and Mrs. Steven O. Spaulding
Mr. and Mrs. Walter G. Stern

Dr. and Mrs. Paul Stein
Dr. and Mrs. John Hirsch

Miss Barbara Steinberg
Dr. and Mrs. Jerry Meyers

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Mr. and Mrs. Phillip Schreiber

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Dr. and Mrs. Morton F. Arnsdorf

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Mr. and Mrs. Burton Follman

Meredith E. Shelton Wolfarth
Mrs. Robert A. Black

Miss Sarah Wolff
Mr. and Mrs. Harold Katz

Mr. Ely Zimmerman
Mr. Stephen Wolff

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Mrs. Stanley F. Jackes

Mr. Barron D. Anstedt
Mr. and Mrs. Phil S. Chew

Mrs. Elizabeth Archambault
Mrs. Elissa Cahn
Mr. and Mrs. Gerry Grossman
Mr. and Mrs. Robert J. Sankosky

Mr. W. Howard Baker
Ms. Armetta Robinson

Clarence Barbre
Ms. Barbara Thompson

Mrs. Lucille H. Beall
Mr. and Mrs. Scott Beall

Mrs. Lonieda Behrens
Miss Ruth A. Hardin
Ms. Virginia C. Wemhoener

Mr. William H. Biggs
Mr. and Mrs. J. Marion Engler
Mr. and Mrs. Forrest von Brecht
Mr. and Mrs. Howard Wilson

Mrs. Esther Bitting
Mr. and Mrs. John K. Wallace Sr.

Mr. Arthur S. Bland Jr.
Mrs. Lewis W. Baldwin Jr.

Mr. Edgar S. Bland
Friends and Neighbors—Bldg. 3

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Missouri Botanical Garden Calendar

Available Now In The Garden Gate Shop!

The spectacular 1991 Garden Calendars are here. Featuring all new full color photographs by Jack Jennings and a poster highlighting the Flora of North America project, the 1991 Calendar is printed on recycled paper. See page 19.

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Missouri Botanical Garden Bulletin

NOVEMBER / DECEMBER 1990

VOLUME LXXVIII
NUMBER SIX

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On the Cover: *Rikyu-konomi* stone lantern near the Plum Viewing Arbor in the Japanese Garden.
—Photo by King Schoenfeld

1990 Missouri Botanical Garden.

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The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $40 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

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Comment

Challenge and Commitment

During the past four years, Garden members have been highly supportive of our capital fund drive, the Campaign for the Garden. As the campaign draws to a close at the end of this year, recognition of your efforts and support must be acknowledged.

Construction on the final project of the campaign, the pavilion in the Center for Home Gardening, is moving along at a fast pace and we anticipate it will be ready for public use during 1991. The new greenhouses that replaced those built over 75 years ago, the completely renovated Climatron and and the new Temperate House and Interpretive Center are constant reminders of the success of this drive. Because of the wonderful generosity of this community, we have been able to exceed our goal making it possible to address other capital needs within this campaign also.

My heartfelt congratulations to our dedicated members of the Board of Trustees, the fantastic volunteers who gave untold hours advising and assisting us and to all the members who continue to demonstrate their commitment to this institution. Henry Shaw gave the Garden to St. Louis, and continued capital improvements will insure that we leave an even greater treasure for the use and enjoyment of future generations.

November and December are delightful times at the Garden. We celebrate two seasons with the Fall Flower Show followed immediately by the Holiday Show, both with charming themes that should make the shows enjoyable for the whole family. (See page 12.)

This is also a time of year to reflect upon the past several months and consider the challenges of this decade. Certainly the condition of our environment will remain our greatest challenge. By continuing to be a part of the Garden, you are participating in the resolution of some of the environmental concerns. Our research and education programs are exposing people to the problems and are helping more children and adults understand the complex factors that are seriously endangering our ecosystem.

Thank you for recognizing these challenges and for becoming a part of the solution through your commitment to the Garden.

Happy Holidays.

Peter H. Raven

RICHARD BENKOF

*BROOKINGS INTERPRETIVE CENTER IS DEDICATED—**Family members at the ceremony September 17, 1990, were (seated, from left): Mrs. Robert Brookings Smith, Mrs. Wallace Smith. (Standing from left): John Wallace, Jr., Mrs. Susan Romanski, Mahlon Wallace III, Mrs. Audrey Otto, Robert Brookings Smith.***

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Brookings Interpretive Center Highlights Environmental Issues

"What You Can Do"

What You Can Do
The Earth is touched by our actions, large & small. Environmental problems endanger our planet. Ecological awareness can ensure our future. We all can do something.
learn
support
act
PLANET PRIORITIES

Top: The new display in the Brookings Interpretive Center.

Center: Three new brochures form part of the display.

Bottom: Receptacles in the Ridgway Center ask visitors to recycle printed materials.

On September 17, relatives of the late Robert Somers Brookings gathered for a ceremony to dedicate the Brookings Interpretive Center on the Tropics (see photograph, opposite page). The facility is designed to help visitors understand tropical and other regional ecologies, how these are affected by global environmental pressures, and what steps can be taken to circumvent these pressures in the future. A significant family gift named the building.

Brookings, a prominent 19th century St. Louis businessman and philanthropist, created the Brookings Institution and was instrumental in the success of Washington University and its School of Medicine. In his remarks at the ceremony, Dr. Peter H. Raven characterized Brookings as a man eminently capable of responding to the challenges of his day, when America was assuming a position of international economic and political leadership. Raven continued, ''His abilities to gather and reflect on information, and to develop measured responses, are precisely the abilities our fellow citizens need as they address the critical environmental problems we face. The Brookings Center allows the Garden to reach out to the community and help them develop the understanding that is such a critical part of this process.''

The Brookings Center, which opened with the Climatron last March, contains exhibits that address tropical deforestation, acid rain, global warming, waste management, and other issues. The newest exhibit, ''What You Can Do,'' was installed recently. The series of panels describes ways that individuals can make a difference in the global environmental crisis. A group of displays is being planned that will allow visitors to touch, interact, and learn about how the environment actually works.

''What You Can Do'' includes a set of three free pamphlets: ''Learn,'' ''Act,'' and ''Support.'' The CPI Corporation donated the printing of 50,000 copies of the pamphlets, which KMOV-TV (Channel 4) is publicizing through contributed airtime. ''I am sincerely grateful to these two companies for their generosity to such an important project,'' remarked Raven. ''We can all have greater confidence in the future when major corporations are concerned and taking action on environmental issues. The Garden is delighted at this opportunity for teamwork.''

IN MEMORIAM/KOICHI KAWANA 1930-1990

PATRICK WATSON

"Koichi Kawana was as close to a Renaissance man as I have ever known: garden designer, architect, artist, writer, poet, collector of fine art, teacher.... His insistence on quality and authenticity makes his gardens memorable.... His favorite was the Missouri Botanical Garden, and his love of the Garden is evident to all who view it."

Geoffrey Rausch, Environmental Planning and Design, Pittsburgh, Pennsylvania, designers of the Garden's Master Plan.

Koichi Kawana

"During Koichi's trips to St. Louis, he was always very busy. When he wasn't answering questions at the site he was meeting with potential donors, giving classes in bonsai, lectures on garden design or a myriad of other tasks.... He was a very special person in my life. I don't think anyone in my professional career has had such a profound effect on me as Koichi. He taught me so much about the art of gardening and human grace."

—Karl Pettit, The Hillier Group, Philadelphia, Pennsylvania, formerly of Mackey and Associates of St. Louis, who were associated with Dr. Kawana in directing the construction of the Garden.

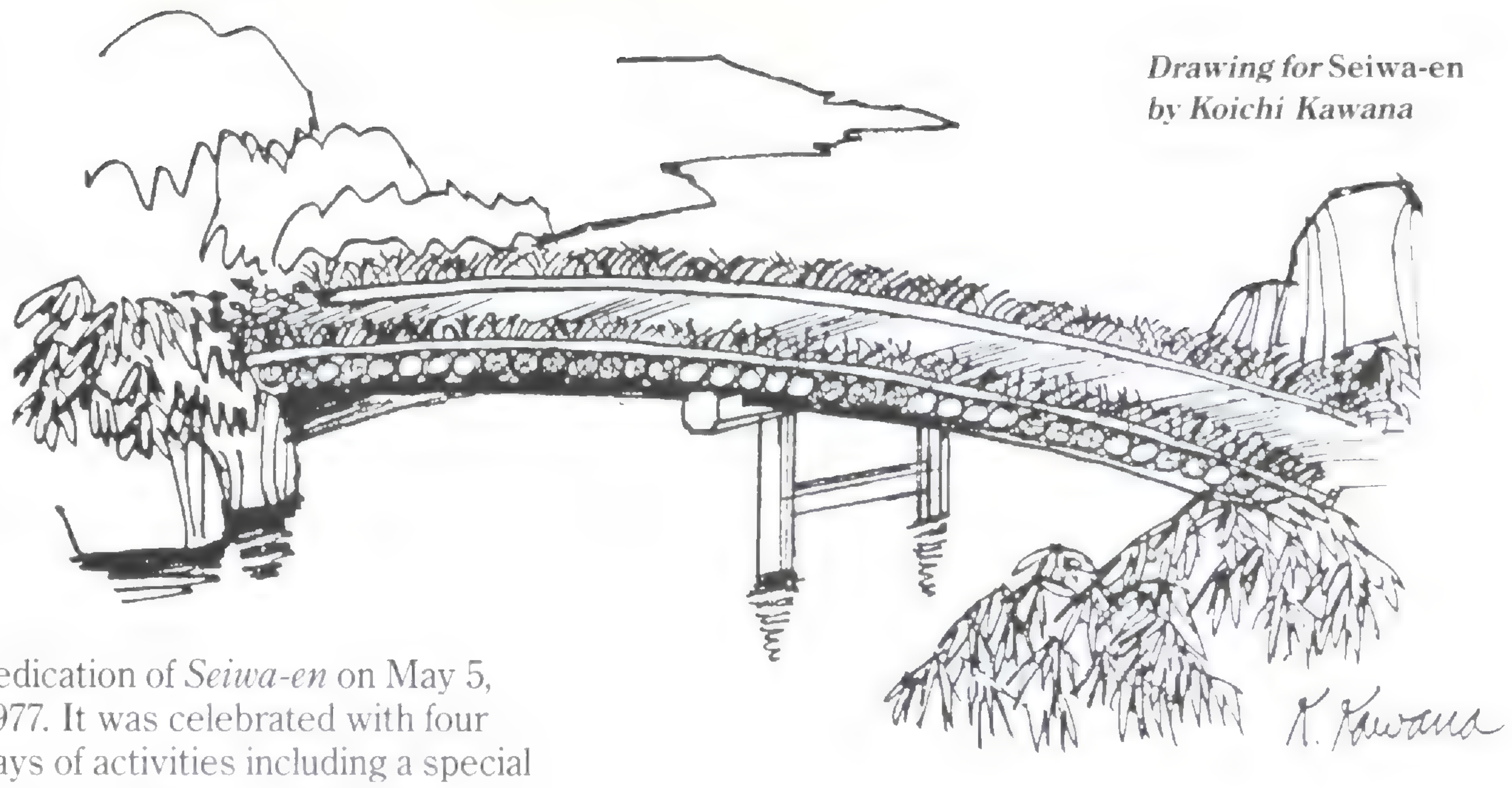
STAFF AND FRIENDS of the Garden and the St. Louis community were deeply saddened by the death of Professor Koichi Kawana on Thursday, September 13, 1990. He died of cancer at the age of 60 at his home in Santa Monica, California. A memorial service in his honor was held at the Missouri Botanical Garden on October 15.

Kawana is best known in St. Louis as the designer of the Garden's 14-acre Japanese garden, *Seiwa-en*, "the garden of pure, clear harmony and peace." It is the largest traditional Japanese garden in the United States, and Kawana's work in creating *Seiwa-en* brought him national recognition.

Kawana is also noted for his design of the 6.5-acre Japanese garden at the Donald C. Tillman Water Reclamation Plant in Sepulveda Basin, Van Nuys, for which he received *Progressive Architecture's* design award in 1972. He designed gardens at Chicago Botanic Garden, Denver Botanic Garden, Memphis Botanic Garden, and the University of Minnesota Landscape Arboretum. At the time of his death, he was developing a major Japanese style landscape design for the Los Angeles County Museum of Art consisting of a traditional garden surrounding the Pavilion for Japanese Art.

Born in Hokkaido, Japan, on March 16, 1930, Kawana was naturalized as a citizen of the United States in 1971. He earned a bachelor of science degree in 1951 from Yokohama Municipal University, and a master of arts in 1959 and a master of fine arts in 1964 from the University of California, Los Angeles. Kawana's M.F.A. was the first in the specialty of Environmental Design, which combines architecture, interior design and landscape design. He studied *Ikebana* at the Adachi-shiki School of Floral Design in Tokyo in 1961. He received his doctorate in 1979 from Pacific Western University in Los Angeles. Since 1966 he was professor and lecturer on environmental design, Japanese landscape architecture and Japanese art at UCLA. He also was chairman of Environmental Design Associates,

MISSOURI BOTANICAL GARDEN ARCHIVES



Drawing for Seiwa-en *by Koichi Kawana*

a Los Angeles-based company. He is survived by his adopted father, Dr. H. Carroll Parish, and a brother and two sisters who live in Japan.

Koichi Kawana achieved distinction in an extraordinary number of areas. In 1974 he was honored with the Companionate of Merit (Officer Grade) in the Order of St. Lazarus of Jerusalem in Edinburgh for his achievements in the field of design and art. In the same year he received the highest honor of the Japan America Society of Southern California, the Victor M. Carter Diamond Award, given to the person who has done the most to perpetuate friendship and understanding between the people of Japan and the United States. In 1987 Kawana received the Henry Shaw Medal from the Garden for his design and implementation of *Seiwa-en*.

Kawana's work here at the Garden began with a recommendation made on behalf of the Japan America Citizens' League (JACL) of St. Louis by George Hasegawa. In the early 1970s the JACL began raising funds to make a contribution to the city. They eventually proposed developing a Japanese feature here, in part because the Garden possessed two Japanese stone lanterns from the 1904 World's Fair.

This was at the beginning phase of the Garden's Master Plan. The idea for a Japanese garden was adopted, and a site was selected along the edges of the large lake that was to be built in the southwest corner of the Garden.

The first step was to find an outstanding landscape architect familiar with Japanese garden design. A former classmate of George Hasegawa was a civil engineer from California who knew of the Donald C. Tillman Water Reclamation Plant and its garden, and he recommended Koichi Kawana. The JACL brought Kawana to St. Louis and supported his initial work here. Hasegawa remembers Kawana as "very knowledgeable in a number of areas including art, artifacts, porcelain, gardening, and a good cook."

The culmination of the years of planning and installation was the dedication of *Seiwa-en* on May 5, 1977. It was celebrated with four days of activities including a special visit by Fumihiko Togo, Ambassador of Japan to the United States.

After the opening of the Japanese garden, Professor Kawana continued to make semi-annual visits to St. Louis to guide the Garden's horticulture staff in Japanese pruning techniques, landscape design, planting, and philosophy. As *Seiwa-en* has developed, visitors and staff members have witnessed the transformation of immature plantings into breathtaking specimens of character and beauty as a direct result of Kawana's genius, patience, and guidance.

Koichi Kawana's legacy will be appreciated and remembered by everyone who strolls through our 14-acre garden of "pure, clear harmony and peace." In honor of Kawana, the entrance garden of *Seiwa-en* will be dedicated to him this year. It contains one of Kawana's original Haiku inscriptions on a granite column. The poem expresses his deep concern and appreciation for the Japanese and their interaction in their local community. The poem can be translated with many subtle variations, reflecting the richness of its meaning, but one translation is: "In St. Louis blooms the flower of the Essei." *Essei* is the word for first generation Americans of Japanese ancestry.

—James Henrich,
Missouri Botanical Garden
Horticulture Staff

"Koichi Kawana was an inspired man whose devotion to artistic principles shines in every corner of his garden. Over the 15 years of our association, he became a dear friend, and I looked forward to his visits with great enthusiasm. His garden is a great gift to the people of St. Louis and his presence will be felt in it as long as people are interested in the beautiful and wonderful aspects of life."

-Peter H. Raven

MISSOURI BOTANICAL GARDEN ARCHIVES

1974—Koichi Kawana inspects the site for Seiwa-en.

Channel 4 and the Garden Team Up for the Environment

Laurie Waters taping a segment in the Linnean House.

THIS FALL, KMOV-TV Channel 4 and the Garden have teamed up to help St. Louisans learn what they can do about today's environmental crisis. Environmental reporter Laurie Waters is shown here taping part of a series of 25-second "What You Can Do" television spots, developed in collaboration with Garden staff. The spots tell people about the small steps they can take at home that will help the environment. Such steps include carrying a reusable bag to the grocery store, turning off the tap water while brushing teeth, and carpooling to save gas. Waters also will produce a series of news stories on the environment, using the resources of the Garden scientific staff. As part of this project, KMOV is a co-sponsor, along with CPI printing, of the "What You Can Do" exhibit in the Brookings Interpretive Center on the Tropics (see page 3).

RESEARCH DIVISION NEWS

May Company Establishes Program for Visiting Scientists

The Garden has received a $40,000 grant from the May Department Stores Company and its Famous-Barr Division to host scientists from rain forest countries to study at the Missouri Botanical Garden.

An important element of the Garden's extensive tropical botany research program is to strengthen local botanical institutions in rain forest countries. As part of this effort, botanists and graduate students often travel to St. Louis to use the considerable resources of the Garden's herbarium and local universities.

The May Scholars program will allow a select group of scientists to travel to St. Louis to advance their botanical research. Many of the scholars will use the knowledge gained at the Garden to influence the future of their countries' conservation efforts.

"We are proud to help the Missouri Botanical Garden offer these educational opportunities," said David C. Farrell, Chairman and Chief Executive Officer of the May Department Stores Company. "The work of the Garden not only enhances the lives of St. Louisans, but extends to the world as a whole."

Chen Chia-Jui from the Institute of Botany of the Chinese Academy of Sciences in Beijing, China, has been designated the first May Scholar. During his four months at the Garden, he will further his studies of legumes. His work will be funded entirely by the May Scholarship Fund.

Students Raise Money for the Rain Forests

THE Henry Shaw Academy (HSA) class on tropical rain forests was the motivational force behind the inspiration of 12-year-old Erin Kelley. The class sparked Erin's desire to do something tangible to help preserve the rain forest.

When she took the class in the fall of 1989, Erin was a sixth grader at Rossman Elementary School in Ladue and served as Student Council President. Erin persuaded her schoolmates that a donation to rain forest preservation was a worthy use for their hard-earned money. Under Erin's leadership, her school raised $1,400 through monthly bake sales. With the knowledge she gained from the HSA class, Erin successfully lobbied the students to donate $700 toward rain forest projects and $700 to their schools' kindergarten class. On the advice of Erin's HSA instructor, Jeff DePew, the bake sale proceeds will go to the Children's Rain Forest, a Costa Rican rain forest preserve first established by Swedish children, and Arbofilia, a reforestation project in Costa Rica.

"I'm so glad that I attended the wonderful program at the Botanical Garden," Erin wrote in a letter to DePew. "This is the first year that I can remember when all of the kids were so excited about the recipient of our bake sale money."

Erin's active campaign to raise money also inspired Parkway United Church of Christ to raise another $150 for the Children's Rain Forest.

The Henry Shaw Academy at the Missouri Botanical Garden offers students aged 7 to 18 exciting ways to investigate the world around them. The unusual program is for students who are interested in exploring the world of science, research, ecology, and natural history. Academy students select from a variety of courses throughout the year as well as Summer Science Camp. The "hands on" experiences offer students opportunities to deepen their understanding and appreciation of the natural world and develop science inquiry skills.

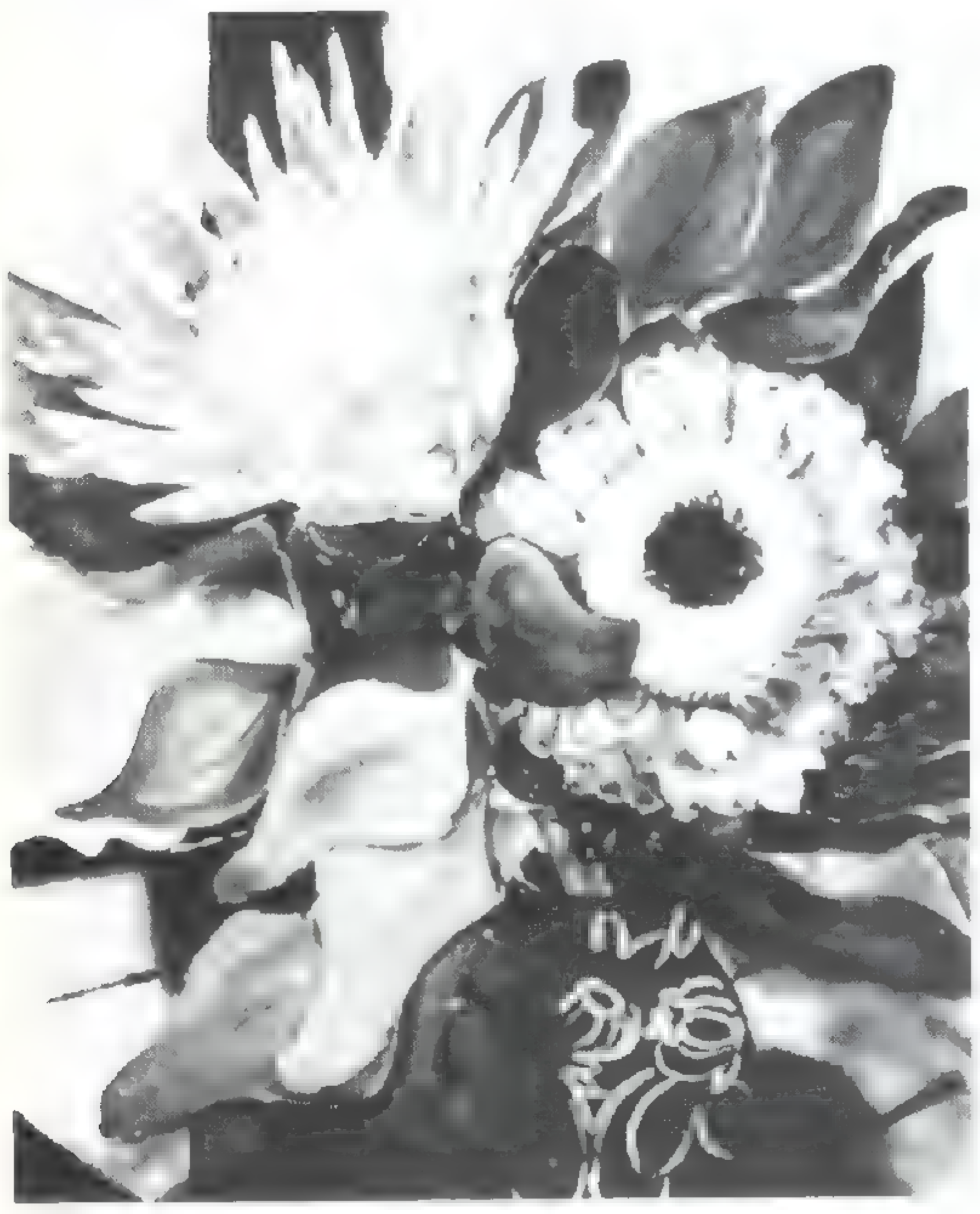
The Henry Shaw Academy will offer a course on tropical rain forests again this winter. Watch your mail for the brochure for Winter Classes, or call Jeff DePew at 577-5135.

Shown above at the reception, left to right: Jeremy Hearder, Australian Consul-General for the Midwest; Mary Brunstrom, director of the Austral Gallery; Margie Wilcott May; Michael J. Cook, Australian Ambassador to the United States; and Keith Stubbs, Manager of International Trade, Australian Chamber of Manufacturers.

Below, left to right: Ambassador Michael J. Cook; Mandy Martin; Mary Brunstrom; Peter Raven.

A SHOWCASE AT THE GARDEN

Australia Week



"Protea King & Queen," watercolor by Beryl Martin, 1990.

At a gala reception September 27 in Monsanto Hall at the Ridgway Center and at the Spink Pavilion, the Garden hosted the official opening of Australia Week 1990. Michael J. Cook, Australian Ambassador to the United States, Jeremy Hearder, Australian Consul-General for the Midwest, and a trade delegation from Australia were guests of honor at the party.

Australia Week was sponsored by the Australian American Chamber of Commerce of St. Louis, the St. Louis Regional Commerce and Growth Association, Qantas Airways, Ltd., KMOX Radio, and Pet Incorporated. Events were held throughout St. Louis during the week of September 28 through October 5, and included business meetings and seminars, art and cultural exhibits, sports, theater and music.

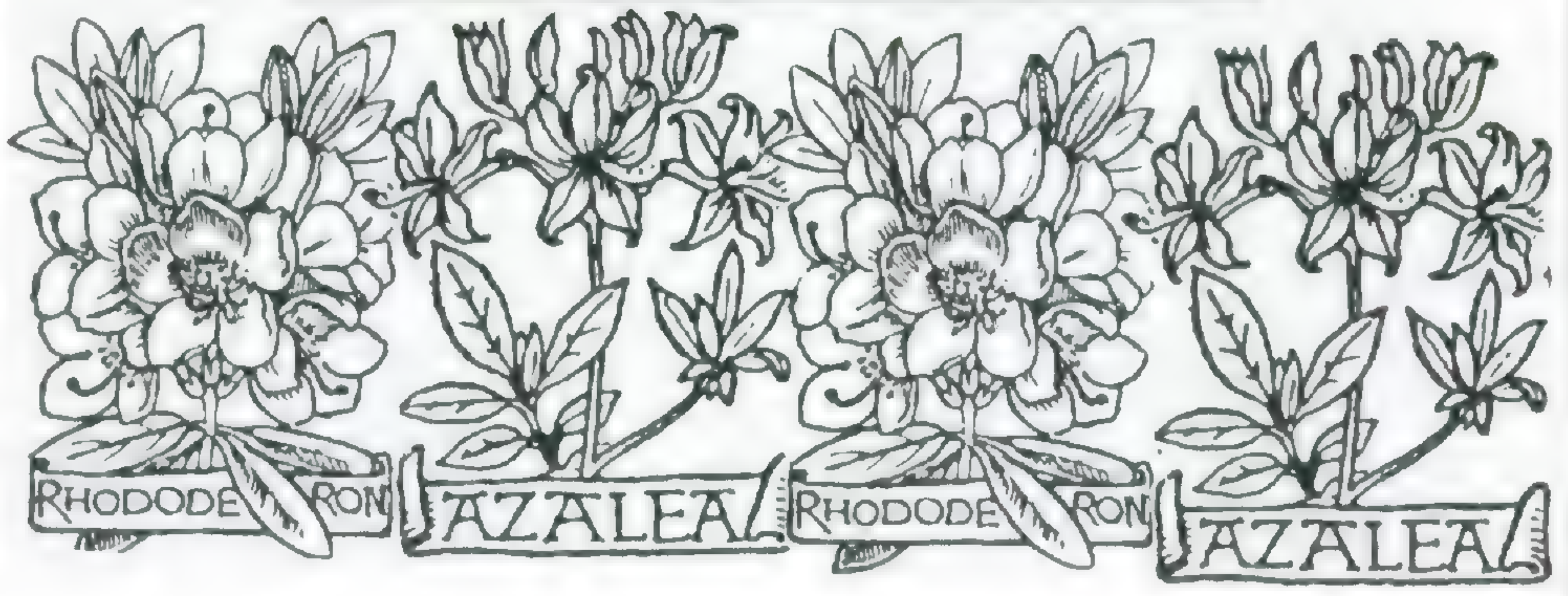
The reception at the Garden featured the opening of a major exhibit by Australian artists Beryl and Mandy Martin. Mandy Martin's large oil paintings are inspired by her environmental concerns, and include a powerful series based on industrial sites along the Mississippi River near St. Louis. Her mother, Beryl Martin, paints vivid watercolors of Australian and European flowers.

Works by both mother and daughter have been included in distinguished collections and exhibits worldwide. The Martin exhibit at the Garden was arranged by The Austral Gallery of St. Louis, owned by Mary Reid Brunstrom, president of the Australian American Chamber of Commerce. Financial assistance for the Mandy Martin exhibit was provided in part by the Missouri Arts Council, a state agency. The Austral Gallery showed works by the noted Australian artist Robert Boynes, husband of Mandy Martin, who also attended the Garden reception.

"Australia is a vital part of the work we do at the Garden," said Dr. Peter Raven, director. "Australia Week was an important contribution to the global exchange programs that are part of our continuing cultural commitment to the St. Louis community."

◀ ***Mr. and Mrs. Lance Joseph, recently in town for Australia Week activities, toured the Garden's Herbarium with Dr. Peter Raven and Dr. Nancy Morin. Mr. Joseph is Deputy Chief of Mission for the Embassy of Australia. The Josephs' visit was hosted by the Monsanto Company.***

Home Gardening



Surviving Winter

EDITOR'S NOTE—The extreme and unseasonable fluctuations in temperature during the past winter caused damage to landscape plantings throughout St. Louis, including the collection here at the Garden. Especially hard-hit were plants that are difficult to grow successfully in this area, including boxwoods and rhododendrons. Here is a report on the extent of the damage, and some suggestions for weathering the winter to come.

BOXWOOD

by Robert Bowden
Director of Horticulture

As the final days of last winter passed, it was evident that the Garden's extensive boxwood collection had suffered a severe blow. Many plants immediately exhibited a sickly yellow flush without hope of regaining their emerald green appearance. Others, in locations throughout the Garden, surrendered slowly to the effects of winter and ultimately had to be removed.

To understand better the widespread effects of the weather on boxwoods in the St. Louis area, we sought the assistance of the Boxwood Society of the Midwest, which is headquartered here at the Garden. Directed by John F. Ansboro, president of the Society, an expert panel of members evaluated the condition of boxwood plants found at the Garden and other locations. In late August, in a report compiled by Mary A. Gamble, the committee issued its verdict on the winter damage.

The boxwoods that survived the winter temperatures were placed into two broad categories. The first category included cultivars that the committee could recommend without qualifications. The second category included cultivars that can be grown here if precautions are taken.

No dwarf boxwoods are recommended unconditionally for growing in the St. Louis area. *Buxus microphylla* 'Compacta' and 'Morris Midget' were recommended for shady areas, and 'Compacta' is suitable for container growing.

The report indicated that no small boxwoods could be recommended without qualification, either. The small boxwood *Buxus sempervirens* 'Myrtifolia,' however, can be grown in sites without strong desiccating winds.

A number of medium-sized boxwoods were recommended, including *Buxus* 'Green Velvet' and 'Winter Beauty;' *B. sempervirens* 'Inglis,' 'Mary Gamble,' 'Pullman,' 'Wellerii;' *B. microphylla* 'John Baldwin;' and *B. sinica* 'Wintergreen.'

Medium to large boxwoods recommended without reservation include *Buxus microphylla* 'Curly Locks' and 'Sunlight,' and *B. sempervirens* 'Natchez,' 'Hood,' and 'Vardar Valley.'

Finally, large boxwoods suitable for the St. Louis climate included *Buxus sempervirens* 'Ste. Genevieve,' 'Belville,' and 'Henry Shaw;' *B. sinica* var. *insularis* (Korean); and *B. sinica* subsp. *sinica*.

The Boxwood Society of the Midwest suggested a number of tips for growing boxwood successfully in the St. Louis area:

1) Proper selection of varieties. Plants that can withstand extreme fluctuations of temperatures are essential, and the right size plant for the given site is desirable.

2) Suitable drainage is a must, as boxwoods cannot withstand prolonged periods of "wet feet."

3) Exposure to southwest winds should be avoided. Rather (in order of preference) north, south, east and, finally, west exposures are recommended. Permanent screenings of dense evergreens or walls are best. However, temporary screens of burlap may be necessary.

4) If you must move boxwoods, the committee suggests transplanting in March, or as early as the soil is workable. Moving established plants in spring and summer has been accomplished but extreme care, including copious amounts of water and shading, is imperative.

5) Pruning of boxwoods should be initiated after April 15 and no later than mid-July. Late pruning stimulates new growth that can be harmed by early frosts.

AZALEAS AND RHODODENDRONS

by Walter Behrendt,
MBG Horticulture Staff

The winter of 1990 was one of the harshest St. Louis has had in many years. The combination of warm spells followed by late spring frosts was too much for many plants, particularly azaleas and rhododendrons. Many of the evergreen azaleas lost their leaves and had few, if any, flowers.

While many plants suffered damage, there were azaleas and rhododendrons that bloomed well. Most of those that bloomed had some type of protection or were hardier varieties. Even plants that were considered hardy, however, were damaged last winter.

The location and care of plants greatly influenced the extent of the damage. Within a single variety, some plants were killed while others were thriving. The difference in a lot of cases was protection from winter wind and sun.

The hardiness of a plant can be affected by its growing and soil conditions. If the soil is not properly prepared, the plant cannot maintain good growth. This is particularly true for azaleas and rhododendrons because they have a very limited and shallow root system.

The soil must be well drained. This can be accomplished by adding about five gallons of Canadian peat moss to the soil per plant, or a four inch layer over a raised bed. This is then mixed into the soil.

Azaleas and rhododendrons are planted with at least half the soil ball above the ground. The soil then is mounded around the root ball, making a raised bed planting. The heavier the soil, the more of the root ball that should be left above ground level. In some cases, particularly with smaller plants, the entire root ball is planted above ground before the soil is mounded. Finally, plants are mulched and watered.

When planting potted plants, it is very important to cut the sides of the root ball with a knife or trowel. This allows the roots to grow out into the surrounding soil.

Once planted, azaleas and rhododendrons should be watered at least once a week during the growing season. They also should be well watered before winter. If plants are allowed to enter the winter season dry, the risk of winter injury is much greater. It may even be necessary to water during the winter if it is very dry. Many people fail to realize that evergreen plants lose a lot of water even in the winter months.

There are many new varieties of azaleas and rhododendrons available today. Many of these have been bred for cold hardiness and compact form. Unfortunately, they may not be easy to buy locally. Many nurseries still sell the older varieties, and while some of these are good, others should not be sold in this area. Two varieties, 'Coral Bells' and 'Snow,' may survive the winters but do not bloom reliably in St. Louis.

Newer varieties may be obtained from some nurseries by mail. Sources can be found in the Journal of the American Rhododendron Society.

Most people buy azaleas and rhododendrons when they are in bloom without first checking to see how hardy the plant is in this area. When selecting varieties, ask someone who already has azaleas what has done well for them, look in books, or call the Garden's Answer Service to get as much information as you can, and then make your choice.

A few azaleas that I do recommend are 'Gables Tall Lavender,' 'Purple Splendour,' 'Herbert,' and 'Corsage,' which are purple or lavender in color. Pink azaleas are 'Fedora,' 'Atlanta,' 'Boudoir,' 'Dr. H. R. Schroder,' 'Mrs. Nancy Dippel,' and 'Mrs. H. R. Schroder.' Red selections are 'Hino Crimson,' 'Red Red,' and 'Girrard Hot Shot.' White azaleas are 'Cascade,' 'Kathy,' and 'Moby Dick.'

A few selections of small leaf rhododendrons are 'Ginny Gee,' white with a pink edge; 'Mary Fleming,' yellow with a pink edge; 'Alice Swift' and 'Olga,' both pink; and 'PJM,' which is lavender. A few recommended large leaf rhododendrons are 'Yaku Queen,' white; 'Boussault,' 'Lee's Dark Purple,' and 'Catawbiense Grandiflorum,' purple; 'Roseum Superbum' and 'Roseum Elegans,' pink; and 'Henry's Red,' 'America,' and 'Nova Zembla,' which are red.

In addition to proper selection and care, some gardeners recommend the use of the anti-transpirant "Wilt-Pruf." This is applied in late fall or early winter when temperatures are above 40°F. Be sure that the plants are well watered before applying. If your plants are in an area where winter wind or sun is a problem, a screen of burlap or snow fence can be used to protect them. Individual plants may be covered with burlap supported with hoops.

However, two of the most important factors for winter protection are proper mulching and watering. Azaleas and rhododendrons need about two to three inches of mulch. Pine bark is the best but oak mulch, shredded leaves, or pine needles are also good. This keeps the roots from being damaged by winter cold. The roots of azaleas and rhododendrons are not as hardy as the rest of the plant, so they need protection from freezing.

We cannot control the weather, but we can control how we care for our plants. Following these steps may seem like a lot of work, but work done well at the right time will be rewarded with beautiful flowers come spring. Once azaleas and rhododendrons are established, they are easier to care for, and the rewards keep increasing as the years go by.

Timely Tips from the Answer Service

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at **577-5143.**

November Tips

■ Don't winterize roses too early. Wait until the foliage has been killed by frost before applying mulches. The best material to use is a 6-10 inch mound of top soil placed over the crown of each plant. Stems may be cut back to a length of 18-24 inches. Gardeners who choose not to fall prune should tie the canes together to stabilize the plant against heavy snows and whipping winds.

■ Apply mulches to perennials as the ground freezes. This will help to minimize heavy damage to plants that results from alternate freeze-thaw cycles.

■ Trees, shrubs and bulbs can still be planted as long as the ground remains unfrozen.

■ Fertilize established bulb beds with a complete "Bulb Booster" formulation.

■ Remove and compost all disease-free plant debris from the garden. This will eliminate large numbers of insect pests.

■ Keep the lawn cut as long as grass continues to grow. Don't allow leaves to accumulate as this may smother and damage healthy turf.

■ Make every effort to stockpile large amounts of fallen leaves. These may be allowed to decay over time to form leaf mold, or used as an ingredient in compost piles.

■ Apply a top-dressing of compost to vegetable and annual beds and till to incorporate. A winter cover crop of one of the cereal grains such as rye, wheat or oats can then be sown. These will germinate as long as soil temperatures remain above 40°F. Cover crops control soil erosion and add large amounts of organic matter when tilled in before spring planting.

■ Continue watering newly planted trees and shrubs if rainfall is inadequate. Be sure all evergreens receive a deep soaking before the ground freezes.

■ Tender broadleaf evergreens, especially young hollies, boxwoods, azaleas and rhododendrons will benefit from a wind and sun screen placed to protect their south and west exposures. Screens made from lattice slats or burlap work well.

■ Winterize young fruit trees by applying a white interior latex paint to their trunks to prevent sun-scald. Wire guards should be placed around their trunks for protection from rabbits.

■ Ensure proper storage of garden chemicals. Liquids must never be allowed to freeze. Powders and granules must always be kept dry.

continued on next page

Trustee Profile

WILLIAM R. ORTHWEIN, JR.

William R. Orthwein, Jr. was recognized at the September Trustee meeting for 15 years of service as a member of the Board. In 1975, two Trustees, Henry Hitchcock and Tom K. Smith, approached Mr. Orthwein about his interests in the Garden. Shortly thereafter, he joined the Board and has remained deeply committed to the institution during the past decade and a half.

"Under the guidance of the Trustees and the remarkable leadership of Peter Raven, I have watched the Garden flourish, becoming one of the most exciting institutions in existence," commented Orthwein. In describing his involvement, Orthwein said that the Garden offered never-ending excitement and new challenges that kept his interest and encouraged everyone within the Garden to do his part. "It is an organization that is fully alive and is continually seeking new and creative ways to fulfill its mission."

Throughout his years of service, Mr. Orthwein has witnessed extraordinary changes and growth in all aspects of the Garden and he believes that one major factor outside of the leadership of its director is the wonderful involvement by the volunteers. "We need to pay tribute to the volunteers who do so much to help keep everything moving smoothly. Each time I visit the Garden I am amazed at the number of volunteers working in practically every part of the Garden. The constant interaction by these outstanding individuals within the various departments is what makes the Garden such a great place. We simply couldn't operate as effectively and efficiently as we do without the support of our volunteers."

In thinking about the future of the Garden, Orthwein is enthusiastic about the completion of the Master Plan adopted by the Board in 1972. "The Center for Home Gardening is a great project and I know it will attract more visitors. I look forward to its opening and believe that with a little bit of time, the Center will become a vital element of the Garden." The Center is the final project within the Plan.

"I see a radiant outlook for the Garden. Our research efforts are fascinating and the quality and scholarship of our staff is astounding. Combined with the creative leadership of Peter Raven, the Garden will continue as one of the most phenomenal institutions I have had the pleasure to serve."

Mr. Orthwein retired from McDonnell Douglas in 1982 after 40 years of service. A Yale graduate, he and his wife, Laura, have been active in many other organizations in St. Louis including the St. Louis Art Museum and Symphony.

GreenLeaf Program Starts Second Year

Union Electric's second annual landscape competition was announced at a seminar for St. Louis City neighborhood organizations held at Spink Pavilion at the Garden. Robert Bowden, the Garden's director of horticulture, gave a presentation on choosing plants for urban landscapes.

The GreenLeaf Program encourages tree planting and energy conservation. The winning organization receives funds and support to implement its design, and all entering groups receive $200 grants toward implementing their plans. Last year's competition was won by the Trinity Square Association in the Hyde Park neighborhood.

William E. Cornelius, chairman and chief executive officer of Union Electric, and Dr. Peter H. Raven are co-chairmen of St. Louis Area Global ReLeaf, a public education campaign to explain the threat of global warming and encourage urban reforestation.

ANSWER SERVICE

continued from page 9

- Don't forget to shut off and drain all outdoor plumbing fixtures to prevent costly repairs resulting from freeze damage.

December Tips

- The planting hole for a living Christmas tree should be prepared before the ground freezes. The hole should be filled with straw to prevent freezing and covered with boards and plastic to keep it dry. Don't forget to mulch and cover the backfill as well.

- The viability of a living Christmas tree declines drastically the longer it is kept indoors. Plan on four to seven days at the most. Keep the tree cool and don't let the roots dry out. Spraying the foliage with an anti-dessicant is of great benefit. If weather conditions prevent immediate planting, place the tree outdoors in a protected site out of wind and sun. Apply a mulch around the roots to prevent freezing and water if the soil ball becomes dry.

- House plants usually require less water during the shorter winter days. Cease fertilizing at this time. Keep plants away from both hot and cold drafts. Check for insects occasionally and wash them off of the foliage if they appear.

- Poinsettias will keep longer if they receive bright light and cool temperatures. Remove the decorative wrappings from pots to allow water to drain away from the roots. Keep the soil moist, but avoid soggy conditions.

- Holly trees can be pruned at this time and the trimmings used for holiday decorations.

- Don't throw away that old Christmas tree! Prune off the branches and use them to provide a bough mulch in the perennial border.

- Minimize foot traffic on lawns when the ground is wet or frozen to reduce winter damage.

- Check stored bulbs such as cannas, dahlias, and gladiolus occasionally. Discard any that spoil. A light sprinkling of moisture may be necessary to prevent shriveling from overly dry conditions.

—Chip Tynan, The Answer Service

UPDATE

As of September 30, 1990 the Campaign for the Garden has raised $18,613,134 in gifts and pledges.

The Garden's capital campaign was given an invaluable boost when officials received word of a substantial bequest from the late Mrs. Marion H. Graves. Mrs. Graves had been a Garden member since the mid-1970s and made her bequest in memory of her mother, Margaret Emilie Wright, an avid gardener.

Marcia Kerz, the Garden's director of development, noted, "Her bequest is especially opportune as we move into the final quarter of fund raising for the capital campaign, where we hope to get as far beyond our minimum $18 million goal as possible in order to cover pressing capital needs throughout the Garden. We have selected the Climatron's new main entrance, which now accommodates the handicapped, to memorialize Mrs. Wright."

"Mrs. Graves was a lovely person and she will be missed by those of us who were associated with her," added Evelyn Crabtree of Boatmen's Trust Company. "I am sure she would have been very pleased to know that her gift was helping the Garden serve the disabled in this way."

• • •

Mr. and Mrs. John Dill had an opportunity to visit the Garden recently, to check progress on the education building, named the Kemper Center in recognition of the naming gift donated by the William T. Kemper Foundation, now under construction as part of the Center for Home Gardening. Mr. Dill is President of Mosby-Year Book, Inc. one of the three St. Louis subsidiaries of Times Mirror, a publishing and communications company. Earlier this year, a joint gift of $50,000 was made to the project by Times Mirror and the subsidiaries, Mosby-Year Book, KTVI-TV, and The Sporting News.

Dr. Peter Raven observed, "The Times Mirror group has long been a generous supporter of the Garden's work. It has contributed challenge funds to spur membership and operations giving, as well as been a continuing part of our efforts to improve the Garden's capital facilities. We are most grateful for Times Mirror's friendship."

• • •

There's something fishy in the Climatron these days . . . Horticulture staff recently added tropical fish to the Climatron's Window-on-the-Tropics exhibit, which replicates a section of Amazon river shoreline so that visitors may see the thinness of rain forest topsoils and begin to learn about important relationships between riverbank plants and water animals.

The Window's artificial rockwork needed several months' time for the water to leach out harmful acids before aquatic creatures could be added. Waiting in the wings were an arowana, a flattened ribbon-like carnivorous fish, and two black pacu, fruit-eating fish that play an important role in seed dispersal along tropical waterways. These fish were donated by the Larsen Company, the creator of the Climatron's rockwork, and the St. Louis Zoo. In addition, a $200 gift from the Missouri Aquarium Society has gone toward the purchase of a number of silver and redhook mytinus (commonly known as "silver dollar fish") and toward general upkeep of the exhibit's animals.

—Donna MacBride,
Capital Campaign Coordinator

Garden
William T. Kempe
Center for Home
Gardening

Mr. and Mrs. John Dill with Peter Raven (right) at the site of the Center for Home Gardening.

1991 Poster Features Flora of North America

The full-color poster bound into each MBG Calendar annually highlights an aspect of the research program at the Garden. The 1991 poster explains in some depth the landmark "Flora of North America" (FNA) project, which has its organizational center here at the Garden. Dr. Nancy Morin, head of the department of botanical information management and convening editor for the project, explains, "FNA is a collaborative project among U.S. and Canadian botanists to classify and describe the higher plants of North America north of Mexico. This will be the first time a full Flora treating all the species throughout their range in North America has been published. The 12 volumes will be published by Oxford University Press, one a year beginning in 1991."

Twenty-three editors work on FNA at their home institutions while hundreds of other botanists write and review treatments of plant families, genera, or even individual species. The Hunt Institute for Botanical Documentation is the bibliographic center. TROPICOS, the computer database system developed at the Garden, is being used to capture FNA data and makes it possible to use the information in new and innovative ways.

The Flora of North America poster presents highlights from the rich array of material developed by the FNA project. The poster makes a special plea that we all "join together to make the best possible use of our information and resources to protect the natural biological heritage of our continent."

NOVEMBER

1 THURSDAY

Exhibit by Wilma Woidt Krueger

9 a.m. to 5 p.m. daily through December 2, Ridgway Center. A display of landscape paintings. Free with regular Garden admission.

2 FRIDAY

**Members' Preview:
Fall Flower Show**

5 to 8 p.m., Ridgway Center. The first flower display of the season! Entertainment, cash bar. Dinner buffet available in Gardenview Restaurant. For members only.

3-4 SATURDAY-SUNDAY

**Best of Missouri's Hands:
Craft Show and Sale**

9 a.m. to 5 p.m. daily, Ridgway Center. Artisans from across the state of Missouri display beautiful handicrafts for sale. Regular Garden admission.

7-9 WEDNESDAY-FRIDAY

Holiday Preview Sale

9 a.m. to 7:30 p.m., Garden Gate Shop. Members receive 20% off, all three days. Shop early for the biggest holiday selection!

17 SATURDAY

Deck the Halls

2 p.m., Shoenberg Auditorium. First in a series of four lecture demonstrations (see November 24, December 1 and 8). Some of the area's finest floral designers offer tips and ideas for spectacular holiday decorations. Free with regular Garden admission.

24 SATURDAY

Deck the Halls

2 p.m., Shoenberg Auditorium. See November 17 for details.

Missouri Botanical Garden
CALENDAR OF EVENTS
November-December 1990

NOVEMBER 3-25 / Fall Flower Show

9 a.m. to 5 p.m. daily, Orthwein Floral Hall. A formal European garden setting with patterned flower beds in brilliant colors. A lavish display of chrysanthemums is accented with celosias, liriope, ornamental grasses, ivy and boxwood. Regular Garden admission. *Members' Preview—see November 2.*

DECEMBER 8 - NEW YEAR'S DAY
Holiday Flower Show

9 a.m. to 5 p.m. daily, Ridgway Center. Closed Christmas Day. An elegant "South of the Border" courtyard garden with a central fountain showcases a spectacular display of poinsettias, including unusual new pink, yellow and variegated specimens. Dry gardens of cacti, agaves and euphorbias are highlighted with ornamental peppers, salvia, marigolds and kalanchoes in brilliant colors. Regular Garden admission. *Members Preview—see December 7.*

WALKING TOURS
Every Tuesday, Saturday and Sunday 1:00 p.m.

Join the Garden Guides for a tour of the grounds, featuring the art, architecture, history and horticulture of the Garden. Meet at the ticket counter in the Ridgway Center. Free with regular Garden admission.

DECEMBE

1 SATURDAY

Deck the Halls

2 p.m., Shoenberg Auditorium.
See November 17 for details.

4 TUESDAY

Candlelight Tour

4:30 to 7:30 p.m., Tower Grov
House. Eighth annual tour, $6 p
person. Reservations are requi
see page 13 for details.

6 THURSDAY

Holiday Luncheon

11:30 a.m. to 1 p.m., Tower Gr
House Tea Room. See page 13
details.

6-8 THURSDAY-SATURDA

Holiday Plant and Gift Sale

9 a.m. to 7:30 p.m., Thursday a
Friday; 9 a.m. to 5 p.m. Saturda
Garden Gate Shop. Members
receive 20% off all gifts and plan
all three days. See page 15.

7 FRIDAY

**Members' Preview:
Holiday Flower Show**

5 to 8 p.m., Ridgway Center. Be
first to catch a glimpse of the fes
holiday display. Entertainment, c
bar. Dinner buffet will be availab
Gardenview Restaurant. For me
bers only; watch your mail for
details.

Holiday Luncheon

11:30 a.m. to 1 p.m., Tower Gro
House Tea Room. See page 13 f
details.

SATURDAY

k the Halls
n., Shoenberg Auditorium.
November 17 for details.

MONDAY

day Luncheon
) a.m. to 1 p.m., Tower Grove
se Tea Room. See this page for
ls.

TUESDAY

per with Santa
ns at 5:30 p.m., Ridgway Cen-
Come for dinner and spend the
ing with clowns, jugglers, Santa
s and more surprises! Reserva-
are required; call 577-5125
nning Monday, November 26.
lembers, $10 non members.

day Luncheon
) a.m. to 1 p.m., Tower Grove
se Tea Room. See this page for
ls.

THURSDAY

per with Santa
p.m., Ridgway Center.
December 11 for details.

day Luncheon
) a.m. to 1 p.m., Tower Grove
se Tea Room. See this page for
ls.

FRIDAY

day Luncheon
) a.m. to 1 p.m., Tower Grove
se Tea Room. See this page for
ls.

SATURDAY

kta Lucia Celebration
5 p.m., Shoenberg Auditorium.
nor of the saint Sankta Lucia,
tional Swedish program of folk
s, Christmas carols, folk danc-
candlelight procession and a
utik (Swedish boutique),
ponsored by the Swedish Coun-
St. Louis. Free with regular
en admission.

NOVEMBER 8 / MEMBERS' DAY "Historic St. Louis Landscapes"

1 and 8 p.m., Shoenberg Auditorium. A lecture by Bruce Kelly, one of the world's leading landscape architects. Mr. Kelly is the designer of Strawberry Fields in New York's Central Park, and he is currently developing the landscape plan for Forest Park. Members of Forest Park Forever will join us for the lectures. Free, for members only. Seating is limited.

DECEMBER 8 / MEMBERS' DAY "The Sounds of the Holidays"

11 a.m. and 1 p.m., Shoenberg Auditorium. A holiday treat for the entire family. Enjoy the beautiful voices of the St. Louis Children's Choirs plus a special holiday reading by Dave Murray, Chief Meteorologist, KTVI-Channel 2. Free, for members only. Seating is limited.

DECEMBER 4-31 A Victorian Holiday at Tower Grove House

Tower Grove House is decorated in Victorian splendor for the holidays and open to visitors from Tuesday, December 4 through Monday, December 31 from 10 a.m. to 4:30 p.m. Step back in time with a tour, daily until 4 p.m., or have lunch in the newly decorated Tea Room, Monday through Friday. Special holiday activities include:

Holiday Luncheons

The Tower Grove House Auxiliary is serving luncheons Monday through Friday in the newly redecorated Tea Room.

The Auxiliary will again have special holiday luncheons on Thursday, December 6; Friday, December 7; Monday, December 10; Tuesday, December 11; Thursday, December 13; and Friday, December 14, 1990, between 11:30 a.m. and 1 p.m. Guests will be greeted with hot spiced cider.

For additional information and reservations call 577-5150. Reservations for holiday luncheons will be accepted beginning Thursday, November 15, between 9 a.m. and 12 noon. Checks must be received no later than Friday, November 30, 1990.

Candlelight Tour

The Eighth Annual Candlelight Tour, sponsored by the Tower Grove House Auxiliary, will be held on Tuesday, December 4, 1990, between 4:30 and 7:30 p.m. Reservations may be made by mailing in the form below. For additional information call Tower Grove House, 577-5150. The fee includes a candlelight tour of the decorated house, plus refreshments in the Tea Room. Enter at 2345 Tower Grove, where your name will be registered. Parking is available across the street at Tower Grove Baptist Church.

Candlelight Tour

Please make ______________ reservations for the Candlelight Tour, Tuesday, December 4, at Tower Grove House between 4:30 and 7:30 p.m. Enclosed is my check for $__________ , at $6.00 per person. Please make checks payable to: Tower Grove House Auxiliary. Check must be received no later than November 30, 1990.

NAME______________________________

ADDRESS___________________________

CITY__________ STATE__________ ZIP__________

PHONE_____________________________

Mail to: Tower Grove House,
P.O. Box 299, St. Louis, MO 63166

GARDEN WALKERS BREAKFAST Every Wednesday and Saturday 7 a.m. to 10:30 a.m.

The popular Garden Walkers Breakfast program continues with the Garden opening early on Wednesday and Saturday mornings. The mileage of various paths around the grounds will be available at the ticket counter. Health and nutrition programs will be offered in cooperation with the American Heart Association. The Gardenview Restaurant will offer its "heart healthy" breakfast buffet of cereals, fruit, juice, and yogurt. The greenhouses will not open until regular opening hours at 9:00 a.m. Admission is free before noon every Wednesday and Saturday.

From the Membership Office

MEMBERS' TRAVEL PROGRAM

Gardens of the Caribbean

■ *FEBRUARY 9 to 19, 1991*

Treat yourself to the perfect winter getaway—a luxurious cruise from Ft. Lauderdale through the Caribbean on the Royal Viking Star, one of the most elegant cruise ships in the world. Join Patrick Bowe, noted landscape architect and author, for a series of on-board lectures and three special excursions to local gardens in full bloom. Highlights will include:

- The lush mountainous landscape of St. John's, home of the Virgin Islands National Park.
- A visit to St. Thomas, with its magnificent beaches and duty free port.
- On Barbados visit Andromeda Gardens, with extensive collections of orchids, hibiscus, and other tropical plants. Then see Flower Forest, situated on a former British sugar plantation and dedicated to preserving the island's native plants.
- Call at Martinique, with a visit to the private home and garden of one of the island's oldest French families; then drive into the rain forest of Balata Gardens, creation of landscape painter and designer Jean-Philippe Thoze.
- A final stop at Philipsburg, St. Maarten, with an excursion to the French side of the island.

Call 577-9517 for tour costs and reservations.

Lewis and Clark History Tour

■ *JUNE 14 to 27, 1991*

Retrace the route of the famed 1804 expedition of Lewis and Clark, led by Ray Breun of the Jefferson National Expansion Historical Association, Nancy Morin and Marshall Crosby of the Garden. This motorcoach tour leaves St. Louis and heads west through St. Joseph, Omaha, Sioux City, Ft. Pierre, Billings, Helena, Great Falls and Missoula, to Portland. Stops along the way will highlight state and national parks and historical sites of the Lewis and Clark expedition, featuring the flora and fauna the explorers saw almost 200 years ago. Watch for more details and reservation information for this exciting first-hand learning experience.

Coming in 1991:

■ *MADAGASCAR—October 1991*

Watch your mail or call Brenda Banjak at 577-9517 for details on this exciting trip!

A Tribute to Family and Friends

You can recognize your family and friends at special times—birthdays, weddings, anniversaries, births, personal accomplishments, and as expressions of sympathy. A tribute is a very personal way to acknowledge special happenings in the lives of friends and family. At the same time, the donations to the Tribute Fund are a vital source of financial support for the Garden. They help cover the costs of daily operations, ensure that the grounds are maintained in the best possible condition, and that programs and services continue to improve.

When you make a tribute donation, a personalized acknowledgement of your gift, without reference to the size of the gift, is sent to the individual or family honored. In addition, both you and the honoree will be listed in the "Tributes" section of the *Bulletin*. You will also receive a receipt for your records and each gift is tax deductible.

If you would like to send a tribute, fill out and send the form printed below. You may also charge your tribute to Master Card or Visa by calling the membership office. For more information about the Tribute Fund, or if you would like tribute remittance envelopes sent to you, please call our membership office at (314) 577-5118.

Tribute Fund—PLEASE PRINT:

The enclosed contribution to the Missouri Botanical Garden is given

In Memory of Mr./Mrs./Ms./Miss ______

In Honor of Mr./Mrs./Ms./Miss ______

Occasion ______

Notify: Mr./Mrs./Ms./Miss ______

Address ______

City ______ State ______ Zip ______

From: Mr./Mrs./Ms./Miss ______

Address ______ State ______ Zip ______

City ______

Please sign card: ______

☐ My check for $ ______ is enclosed.

☐ Please charge: ☐ VISA ☐ MasterCard

Amount: $ ______

Account No. ______

Name on card: ______

Expiration date: ______

Signed: ______

Detach and mail to: Missouri Botanical Garden
Tribute Fund
P.O. Box 299
St. Louis, Missouri 63166-0299

From the Garden Gate Shop

1990 Holiday Card

The Garden's beautiful new 1990 Holiday card features a full color Jack Jennings photograph of the Milles "Angel Musicians" in the snow, printed on recycled paper. "Wishing you a world of peace and joy" is the message printed inside. The cards are available in packages of 10 cards with 11 matching envelopes for $8.50.

Gifts for Every Holiday List

Come to the Shop for a glorious abundance of charming holiday decorations: ornaments for your tree, door, and hearth, potpourri, Dickens collectibles, and more. There is the right gift for everyone on your list, from garden statuary and accessories to tee shirts, toys, placemats, platters, lamps, vases, jewelry and more:

- Sarabeth Preserves won Best Award and Best Preserves Award at the Fancy Food Show. The Shop's selection includes Orange Marmalade and Cherry Plum, $10.95 per jar.
- Crabtree & Evelyn preserves, cookies, teas and condiments are fine gifts for gourmets.
- Gifts geared to environmental education, including ant farms, globes, games, toys, and books.

Books, Books, Books

- The Shop still has the August 1990 issue of *National Geographic* featuring the Garden. Copies are available for $4, and make wonderful gifts.
- *A World of Plants: The Missouri Botanical Garden* is a magnificent book from Harry N. Abrams, Inc. Sumptuously illustrated with 158 plates, 125 in full color, the book celebrates the history, displays, and research at the Garden with essays by noted botanists and historians. $39.95.
- The 1991 Missouri Botanical Garden Calendar treats you to the beauty of the Garden every day of the year with glorious 16 × 12-inch color photographs by Jack Jennings. $10.95.
- The Garden Gate Shop has the largest selection of books on plants, gardening, landscape design, and nature in town. Children's books, cook books, greeting cards, note paper and posters offer an array with something for everyone!

1990 Holiday card, "Wishing you a world of peace and joy," box of 10, $8.50.

A World of Plants, ***Abrams, 192 pages, $39.95.***

A World of Plants

From the Plant Shop

- Bulbs for indoor forcing, including paperwhite narcissus and amaryllis. All bulbs sold in the Shop are nursery-propagated.
- Poinsettias, Norfolk Island Pines, Christmas cactus, and a special holiday selection of cacti, blooming plants, and miniature decorated trees.

Mark Your Calendar

- **Holiday Preview Sale**
  November 7 through 9
  9 a.m. to 7:30 p.m. daily

Members receive a 20 percent discount on all merchandise, all three days.

- **Children's Book Week**
  November 12 through 18
  9 a.m. to 5 p.m. daily

MoBots receive a 10 percent discount on all books, all week long.

- **Holiday Sale**
  December 6 through 8
  9 a.m. to 7:30 p.m. Thursday and Friday; 9 a.m. to 5 p.m. Saturday

Members receive 20 percent off everything in the Shop.

Come early and often! Start your celebration of a joyous holiday season at the Garden Gate Shop.

Guyana Week Is Celebrated

The Garden hosted a reception on August 14, 1990, following a ceremony at City Hall where Mayor Vincent Schoemehl and Georgetown Mayor Compton Young met and signed a sister city affiliation agreement. Georgetown, Guyana is St. Louis's newest sister city. Events in honor of the affiliation were held citywide August 6-12.

L. A. KELLY

Attending the reception in honor of Georgetown, Guyana, were (left to right): Walter Jordan, Hugh Chan, Tamra Raven, Joseph Thompson, Sr. Theresa LaRose, Peter Raven, Mayor Compton Young, Hafiz Rahaman, Robert Kresko, Lois Schoemehl, Mayor Vincent Schoemehl, Annette Carter Harris, Christopher Nascimento, Olga Britton, and Joycelyne Loncke.

PROFILE

MARTHA RILEY

Archivist

The Garden Archives are tucked away in a corner of the library in the Lehmann Building. Sifting through the stacks of boxes, photographs and documents may seem like dry and dusty work. "But it's really like being a detective," says Martha Riley, the Garden's archivist.

"Archives are an institution's memory," Martha explained. "Preserving, describing and protecting our records makes accurate history possible. Knowing what was done in the past can affect the ways we develop projects today." For instance, the archives were consulted for Henry Shaw's original records of plantings when the trees on the grounds were surveyed. The Tower Grove House restoration committee works with Shaw's papers to verify details of furnishings, colors and fabrics. "Finding the answers in a maze of detail is a challenge!" Martha says.

The archives can include any records of historical value. These can be as diverse as glass plate negatives, blueprints, original correspondence, field research notebooks, slides, minutes of meetings, recordings, and publications. Martha's job is to organize all of this material and make it accessible for future research.

Sometimes just locating the material is a challenge. When Martha came to the Garden, she surveyed the collection and discovered gaps. When she began exploring, documents came to light in a number of storage areas. "I found the director's correspondence of Frits Went and David Gates in an old safe being used as a janitor's closet," she said. "In an old filing cabinet in the herbarium I found accessions records from 1913 to 1972."

Today the Garden maintains an aggressive effort to preserve records of permanent value and place them in the archives intact. Within the next few years Martha, with the help of staff and volunteers, will computerize the collection by adding it to an Integrated Online Library System. Plans are also underway to develop a records management program for the entire Garden.

Martha brings impressive credentials to these formidable tasks. She received a bachelor of arts in 1972 and master of arts in 1974 from the University of Iowa, and went on to earn her master of library science degree in 1982 at the University of Illinois in Champaign-Urbana. She had become interested in library science while working in the library of Williams College in Williamstown, Massachusetts, and she came to St. Louis in 1982 as the rare books librarian at the St. Louis Public Library. Martha came to the Garden in 1984.

"I enjoy dealing with all of the people who use the collections," she said, "staff, volunteers, and outside scholars. It's fun to help them find the answers to their questions!"

Library Grant Awarded

The Garden Library has received a $17,000 grant to enter 6,000 titles into OCLC, an automated bibliographic database that is available to more than 10,000 libraries internationally. The grant is being awarded under the Federal Library Services and Construction Act (LSCA), administered through the Missouri State Library. The project that is being funded is part of a long-range cataloging project to enter all Missouri Botanical Garden Library holdings into OCLC and also make them available through the Missouri Statewide Database.

RICHARD BENKOF

Peter Raven (left) with Paul H. Wunderlich, president and chief executive officer of St. Luke's Hospital.

Portrait of Henry Shaw Comes to the Garden

A magnificent oil portrait of Henry Shaw has been given to the Garden by St. Luke's Hospital. The portrait, painted by George C. Eichbaum in 1884, honors Shaw's service as chairman of the hospital's board of directors.

Henry Shaw played an important role in the history of St. Luke's Hospital, which was founded in 1866. He served on the board from 1883 until his death in 1889. He donated $5,000 and the land at 19th Street and Washington Avenue where St. Luke's opened a new hospital in 1882. St. Luke's is now located on Woods Mill Road near Highway 40 in Chesterfield.

The painting has been cleaned and restored and it now hangs in the Administration Building, which was originally Henry Shaw's townhouse. "It is the best painting of Henry Shaw that I have seen, and certainly the only one we have of him at that age—probably about 80 years old. We are pleased and honored to have it here," said Dr. Peter H. Raven, the Garden's director.

RICHARD BENKOF

CHINESE SCIENTIST VISITS GARDEN—Dr. Zheng-Shen Li, vice president of the Chinese Academy of Sciences of the People's Republic of China, visited the Garden in August. Dr. Zheng-Shen Li, at right with Peter Raven, came to discuss the Flora of China, which is based here at the Garden, and various conservation projects.

MBG VIDEOS—Shown below is a scene from the filming of "The Secret of the Pond," a 12½-minute video developed by Herb Halpern Productions in cooperation with the Garden's education division. The video is the first of a series being prepared on various natural science topics for sale to elementary schools. Response to date has been enthusiastic; "Exceptional" and "The best thing we've ever seen for teaching science to children" have been some of the comments from educators. For more information, call toll free 1-800-927-9229.

Running Buffalo Clover Returns to Missouri

The Center for Plant Conservation program at the Garden has been instrumental in reintroducing an endangered species to the wild. Running buffalo clover, *Trifolium stoloniferum*, once widespread in Missouri, has been in protected cultivation at the Garden for the past three years. This past summer Garden horticulturists supplied 14 mature plants to the Missouri Department of Conservation, to be planted at three selected natural sites.

"This is the first time that endangered plants propagated here have been reintroduced to the wild," said Greg Wieland of the Garden's horticulture staff. The plants can be seen thriving in a display in the north extension of the English Woodland Garden. "The plot is fenced, because animals love to eat it," Wieland said.

Running buffalo clover apparently was often associated with bison trails and may need moderate disturbance to reduce competition. Sixteen populations have been found in other states, but none in Missouri. It is hoped that it will soon come back in the state, as the Department of Conservation continues to monitor its management strategies.

37th Annual Systematics Symposium

Symposium participants included (Top row, left to right): Donald Stewart, John Lundberg, Aaron Bauer, Alwyn Gentry, William Duellman, Kåre Bremer, James Carpenter. (Middle row, left to right): Joey Coetzee, Edward Ross, Annick Le Thomas, Robert Magill, Elisabeth Vrba, Edgardo Romero, Herbert Baker, Diane Davidson, Larry Marshall. (Bottom row, left to right): Paul Colinvaux, Doyle McKey, Daniel Livingstone, François Vuilleumier, John Maisey, George Schatz.

Some 450 scientists from around the world gathered at the Garden October 4 through 6, 1990, to discuss the biological relationships between Africa and South America at the 37th Annual Systematics Symposium.

In the last 25 years considerable information has accumulated relating to the events that led to the fragmentation of West Gondwanaland, one of the so-called "supercontinents," and the creation of the Atlantic Ocean and the continents of Africa and South America. This symposium was devoted to an investigation of these events and their biological effects on plants and animals.

Dr. Paul Collinvaux of Ohio State University gave the keynote address on the final evening. His talk, entitled "The Pleistocene vector of rain forest diversity," examined the causes of the incredible biodiversity found in tropical rain forests, which he links to climatic changes of glacial cycles. Working with the first fossil data ever found from the last ice age, Collinvaux has found that long intervals of significant cooling occurred in the rain forested lowlands of South America, resulting in the extinction of organisms that thrived in high temperatures.

These climatic disturbances, which he believes occurred on all time scales, contributed to the high species diversity of the South American rain forests. This implies that the rain forests must be able to endure some level of disturbance, indicating that, according to Collinvaux, a sound rain forest conservation system would allow some use of the forest without catastrophic consequences.

Twenty-one other papers were presented at the Symposium. Traditionally a one-day event, the 1990 symposium was expanded into three days to accommodate the wealth of information to be discussed. Topics covered various reptiles, amphibians, insects, mammals, and birds, as well as plants.

The Systematics Symposium receives funding from the National Science Foundation. This is the 35th year of this funding.

THIS WINTER AT SHAW ARBORETUM

Winter Happenings

Cross country skiers at the Arboretum.

Winter at Shaw Arboretum may appear desolate—a silent world of empty skies and nothing but the skeletons of trees and shrubs. But nature has stories to tell for those who are willing to face the cold, especially after a newly fallen snow.

Stories and dramas in the lives of active winter animals are depicted in the snow and wet mud. With a simple track guide you can tell what animals went where and perhaps how they interacted. Look for other signs of animal activity as well: diggings in the ground or snow; scratches on a tree, showing where a raccoon climbed to its winter home in a tree hollow; deer beds, appearing as flattened ovals in the snow or grass; and scat, or droppings, which may contain the remains of fruit or small mammals.

While you admire the subtle browns and rusts of the tree barks and prairie grasses, notice the soft twitterings and rustlings in the trees. Not all birds migrate south; many can adapt to the extreme weather conditions. The cardinal, chickadee, tufted titmouse, goldfinch and our friend from the north, the slate-colored junco, are some of the birds you may see during your visit.

Rather than walking the winter trails, try cross-country skiing, another option not available during any other season. If you do not own skis, a number of the outdoor shops in the St. Louis area rent them. For photography enthusiasts, the Arboretum offers a wealth of subjects. The winter has its own mood, especially in black and white.

A trip to Shaw Arboretum in the winter is not to be missed to keep in touch with the natural world and to appreciate the hardiness of life in winter.

—Marjie Martinez,
Shaw Arboretum Instructor

A REPORT FROM THE FLORA OF MISSOURI

"Backyard Botany"

The Missouri Botanical Garden's research program in tropical botany is famous internationally, but some people are still surprised to learn that the Garden is also active in its own "back yard," the state of Missouri. The *Flora of Missouri Project* is a unique collaboration between the Garden and the Missouri Department of Conservation that was begun in 1987 and is directed by Conservation Department botanist, George Yatskievych, who is also curator of Missouri plants at the Garden. The project will eventually result in a thorough revision of the late Julian Steyermark's landmark *Flora of Missouri*, which was first published in 1963 and has since sold out six printings.

Every serious student of Missouri's flora has depended on Steyermark's "botanical bible" as the principal reference on identification and distribution of the nearly 2,600 species of vascular plants in the state, and the book has been widely acclaimed as one of the finest such manuals written to date. The new edition will feature descriptions for all species and will incorporate the large number of taxonomic changes that have resulted from recent studies by specialists (such as those in the Garden's research department). It will also include information on nearly 200 recently introduced weeds and overlooked natives, not present in the previous edition, as well as streamlined diagnostic keys and data on plant distributions. New illustrations for each species are also being prepared by several talented artists.

Although the new edition of *Steyermark's Flora of Missouri* will not be available until the mid-1990s, a new *Catalogue of the Flora of Missouri* has recently been published to fill the need for up-to-date information on Missouri plants in the interim. This concise, annotated checklist of the state's flora has been compiled by George Yatskievych and Joanna Turner, a Garden volunteer, and is volume 37 in the Garden's *Monographs in Systematic Botany* series. It provides information on current scientific and common names for all of Missouri's vascular plants, including those species discovered to grow in the state since 1963. Each entry is cross-referenced to *Steyermark's Flora of Missouri* by page number and a lengthy bibliography provides access to further information on additions and updated names. Copies of this new publication are available in the Garden Gate Shop for $9.00 each.

—*George Yatskievych*

Giving Mother Nature a Hand

The gigantic *Victoria* water lilies have delighted Garden visitors since 1894 when the first specimen bloomed here. But *Victoria* was the only one of the 45 hybrids and 8 species of water lilies grown at the Garden that was not propagated here; it grows from seeds and, in nature, requires pollination by a specific type of beetle, *Cyclocephala hardyii*, that lives only in South America. For many years the Garden has received annual donations of *Victoria* seeds from Longwood Gardens. But for the past four years Mary Smith, curator of special collections, has been hand pollinating the water lilies, hoping to develop seeds here.

PAT ROMANO

Mary Smith inspects Victoria *water lilies.*

Victoria blooms only at night. Flowers open for two consecutive nights, then the blossoms sink into the mud, where seeds develop. In nature, a beetle enters a new flower, is trapped when it closes during the day, and emerges on the second night covered with pollen, to enter a new first night flower. Mary duplicates this sequence by entering the lily pools at night wearing waders and carrying pollen from flower to flower with paint brushes. The water lilies are covered with sharp thornlike appendages that can sting. The process has required a lot of trial and error.

Last year her efforts yielded just three fertile seeds. "I put them in a greenhouse tank to germinate and the fish we keep to eat algae ate them!" Mary explained. The process of experimentation continued this summer with great success: by late September Mary had harvested 2,100 seeds, with more to come. The seeds will be germinated in tanks in the greenhouses this winter, and next summer the Garden should have some "home grown" *Victoria* water lilies. "It's very exciting to see four years of experiments pay off," Mary said.

UMSL and the Garden Are In the News

Gracielza dos Santos Is Named Outstanding Student in Biology

Gracielza dos Santos with Peter Raven.

Gracielza dos Santos, who received her master of science degree from the University of Missouri-St. Louis (UMSL) in August, was chosen by the graduate school to be Student Marshal at commencement August 5, where she was named Outstanding Student in Graduate Studies, Biology.

Gracielza originally came to the Garden from Belém, Brazil in August, 1988 as a fellow of Partners of the Americas for a one-year training program under the supervision of Enrique Forero. Shortly after her arrival she was accepted to the Garden's joint graduate program with UMSL, with support from the Missouri Botanical Garden, the Joyce Mertz Gilmore Foundation, and a fellowship from the Roothbert Fund, Inc. She will continue her graduate education in England, where she has been accepted for the Ph.D. program of the University of Reading and the Royal Botanic Gardens, Kew.

John Denver Is Honored

Recording and film star John Denver received the World Ecology Award from the International Center for Tropical Ecology at UMSL on September 13. Denver was honored for his personal commitment to focus international attention on the environmental crisis facing the world today. His Windstar Institute, a non-profit education and research center, brings scientists together to discuss deforestation and environmental issues, and sponsors efforts to improve teaching of natural science in schools.

Denver visited the Garden later the same day for a tour of the research division and grounds. He praised scientists at UMSL and the Garden for their work in understanding and protecting tropical ecosystems. "There is no greater knowledge that needs to be gained," he said.

New Subdistrict Commissioner

Robert H. Orchard

Robert H. Orchard was recently approved by County Executive H. C. Milford to serve as a member of the Botanical Garden Subdistrict Commission from St. Louis. Mr. Orchard succeeds the late Robert M. Sunnen. The Subdistrict is comprised of ten members, five from St. Louis City and five from St. Louis County. It serves as the public body responsible to receive and disperse funds acquired through the property tax support approved by voters in 1983.

Mr. Orchard is retired and the former Chairman and Chief Executive Officer of Orchard Corporation of America.

A resident of St. Louis County, Mr. Orchard has been active in area arts and cultural organizations and is a past member of the St. Louis Mayor's Arts and Humanities Commission. With an interest in music, Mr. Orchard serves on the Visiting Committees in the Music Departments of both the University of Rochester and University of Chicago, and is the program director for Opera Theatre at KFUO. Today Orchard serves as a board member to the Saint Louis Art Museum and Center for Contemporary Arts, among others.

Mr. Orchard commented, "I am happy to be chosen to serve as a Commissioner and I look forward to my involvement with Shaw's Garden and the Subdistrict."

Moving? Please Remember To Send Us Your New Address.

To avoid missing any of your membership mailings, you *must* give us your new address at least three weeks *before* you move. Please enclose the mailing label on the back cover of this *Bulletin*, and mail to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

Name:________________________

Old Address:

____

City__________________________

State___________Zip___________

New Address:

(Date effective:__________________)

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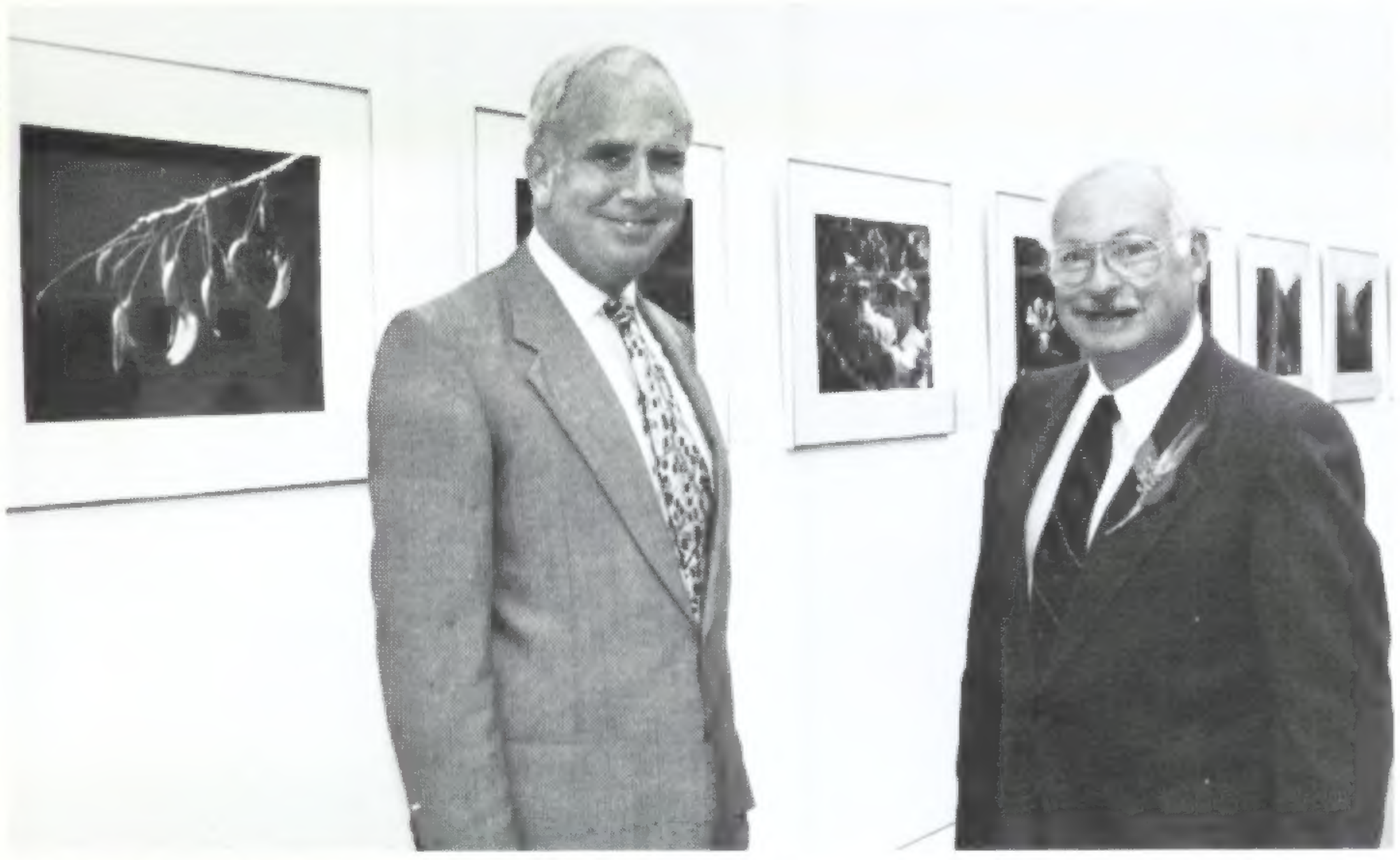
City__________________________

State___________Zip___________


L. A. KELLY

JAMES P. BLAIR, shown at right with Dr. Peter H. Raven, visited the Garden in September to deliver a series of lectures on his work. Blair has been a photographer for National Geographic *for 30 years. He has photographed forest destruction in both North and South America, and his work is featured in the August 1990 story "The Plant Hunters: A Portrait of the Missouri Botanical Garden."*

RICHARD BENKOF

BUGS ON THE GO—Dr. Edward S. Ross, world-renowned entomologist and nature photographer, presented an entertaining lecture on insects, flowers, and pollination October 2 in Shoenberg Auditorium. Dr. Ross's beautiful photographs have appeared in National Geographic, *numerous textbooks and the mural in the Gardenview Restaurant. Dr. Ross is curator emeritus at the California Academy of Sciences Department of Entomology.*

Tributes

JULY - AUGUST 1990

In Honor Of

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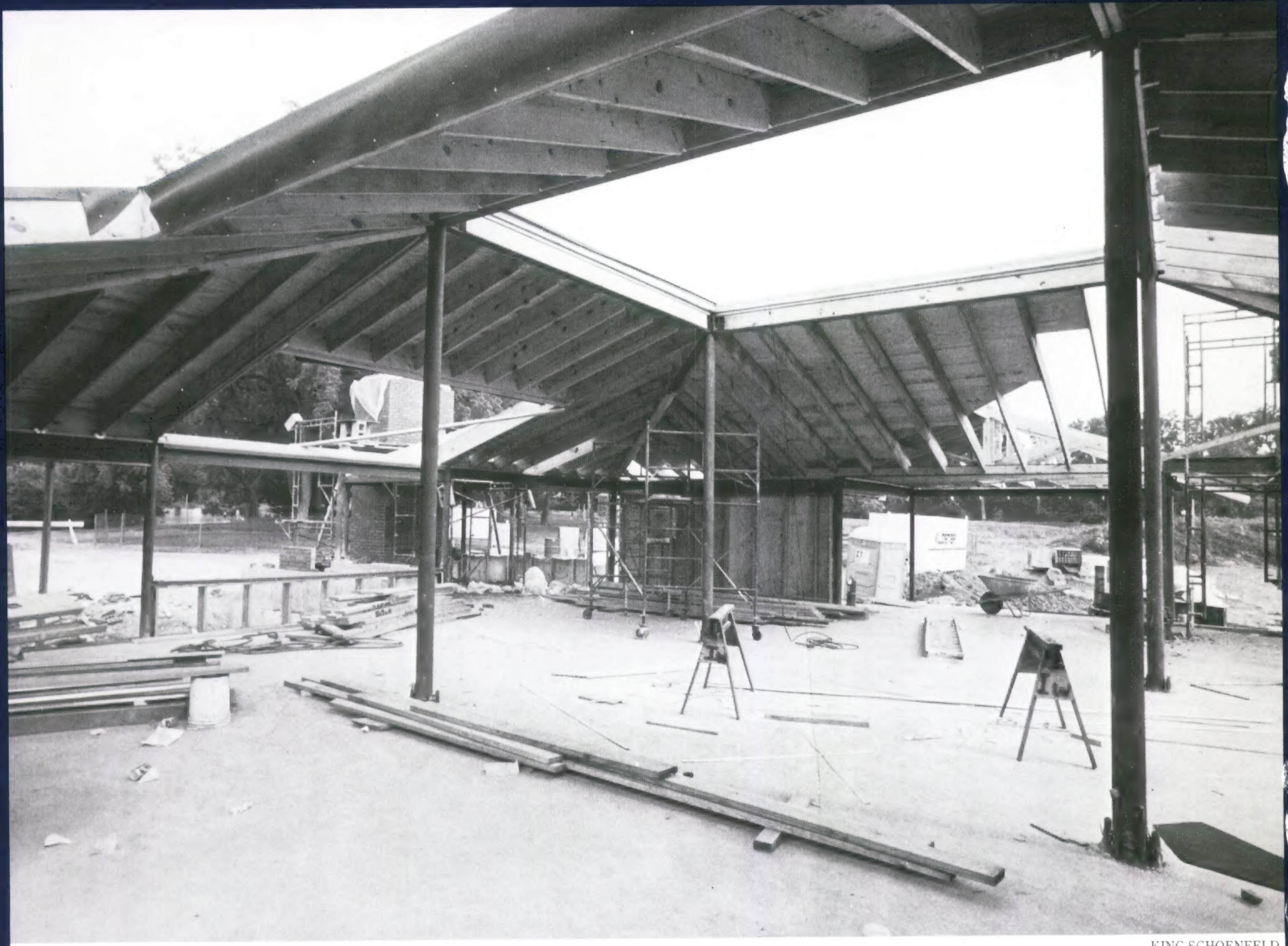

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